# Journal

OF THE

## AMERICAN VETERINARY MEDICAL ASSOCIATION

### *Transenteral Entrance of Hog Cholera Virus*

AN INVESTIGATION was made to determine where the virus enters the mucosa of the digestive tract and how it is transported to tissues. Page 149

### *U.S. Livestock Sanitary Association*

EXCERPTS from reports presented at the sixty-third annual meeting in San Francisco, Dec. 16-17, 1959. Page 158

### *Feed Medication for Coccidiosis in Poultry*

A DISCUSSION on the safety and efficacy of the coccidiostats used in poultry feeds. Page 164

### *Canine Histoplasmosis*

A CASE REPORT of histoplasmosis in a dog with persistent diarrhea. Page 171

Vol. 136 February 15, 1960 No. 4



Widely used – proved – accepted

# DURAGEN

Erysipelas Vaccine

Live Culture – Modified

DURAGEN is now well along in its second year of use and the long list of satisfied practitioners is growing steadily. Consistent results are evidenced by reorders from these veterinarians who have confirmed the safe, durable immunity offered by DURAGEN.

The prime reason for this widespread acceptance is the precise balance found in DURAGEN. Improved production techniques have maintained the antigenic characteristics of this unique strain even though this live culture has been modified to a point completely safe for any pig. A 2 cc. dose is adequate for all ages and can be expected to carry swine well past market age. No serum buffer is needed.

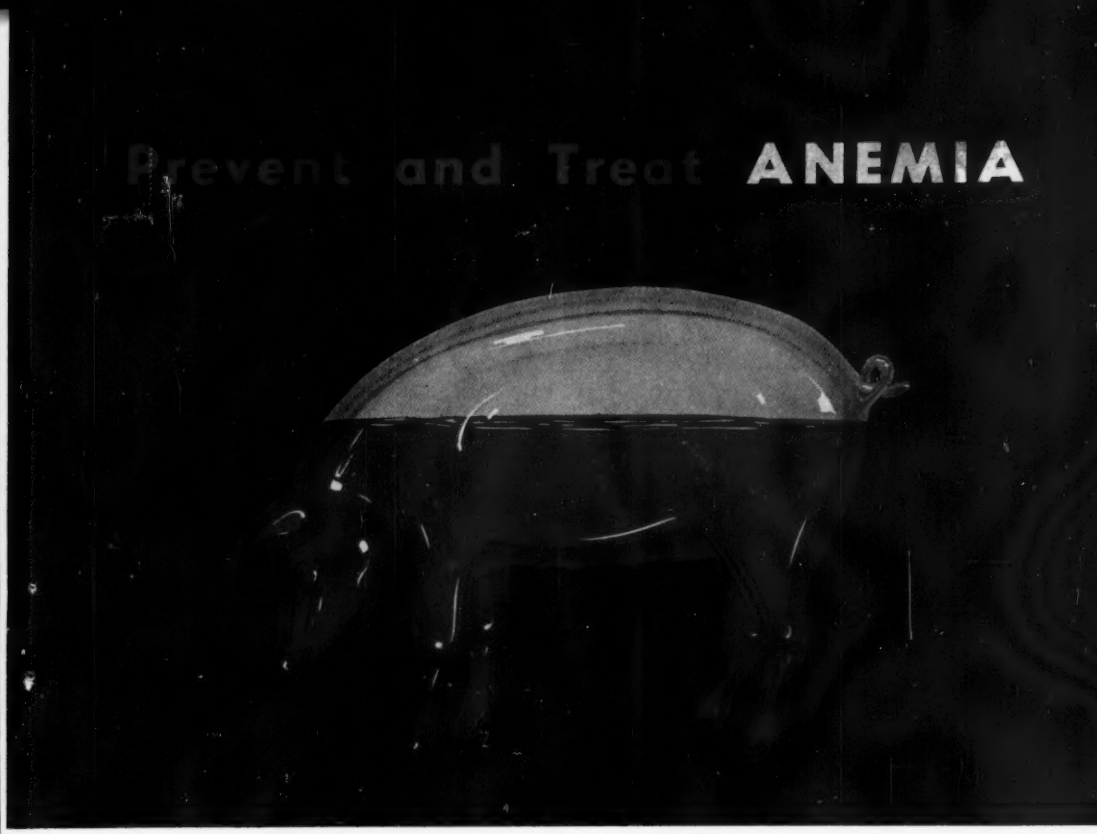
DURAGEN is supplied with diluent, in 5, 25, and 50 dose vials.

CS

CORN STATES LABORATORIES, INC.

1124 HARNEY STREET • OMAHA, NEBRASKA

SUBSIDIARY OF ELI LILLY AND COMPANY



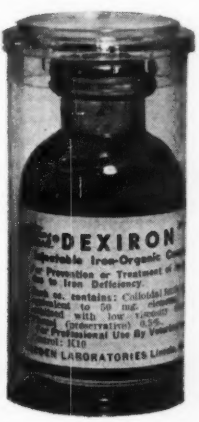

# DEXIRON

(INJECTABLE)

## NORDEN'S highly absorbable iron features Dextrin for controlled viscosity

- Modern, highly effective injectable form of iron, containing colloidal ferric oxide equivalent to 50 mg. elemental iron.
- Controlled viscosity reduces or prevents "leakage" from injection site found in ordinary thinner iron solutions.
- Safe—no toxic reactions in pigs followed intramuscular injections 2-3 times normal dose; no cyst formation or discoloration of tissues.
- One 2 cc. injection at 2-4 days overcomes early anemia and sustains hemoglobin levels up to 4 weeks.

Supplied In: 20 cc vials; 100 cc vials. Patent Pending.




Norden® **NORDEN LABORATORIES Lincoln, Nebraska**

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Vol. 136 No. 4 Feb. 15, 1960

# CONTENTS

## ARTICLES

The Transenteral Entrance of the Virus in Hog Cholera—*H. C. H. Kernkamp* 149
A Method for Bovine Semen Analysis—*J. A. Deubler and M. J. Deubler* 156
United States Livestock Sanitary Association—Excerpts of Reports ..... 158
Is Feed Medication the Answer to Coccidiosis in Poultry?—*R. L. Kilgore* .. 164
Canine Histoplasmosis with Intestinal Involvements—*Rhoades—Helper—Fritz* ..... 171
Pancreatic Atrophy and Absorption Failure in a Boxer—*Carl H. Clark* ... 174
Furacin Treatment of Gray Diarrhea in Mink—*John D. Palarski* ..... 177

## EDITORIAL

The Veterinary Scientist and Cardiovascular Research—*James H. Steele* 180

## FEATURES

Correspondence ..... adv. p. 4
Washington News ..... adv. p. 14
What Is Your Diagnosis? ..... adv. p. 39
History of the AVMA ..... adv. p. 44

***Contents continued on adv. page 4***

EDITORIAL STAFF: D. A. Price, *Editor in Chief;* A. Freeman, *Assistant Editor;* H. E. Kingman, Jr., *Managing Editor;* Eva G. Bailey, *Production Manager and Assistant to the Editors.*

OFFICERS OF THE AVMA: S. F. Scheidy, Bryn Mawr, Pa., *President;* Fred B. Pulling, Atascadero, Calif., *Vice-President;* E. E. Leasure, Manhattan, Kan., *President-Elect;* H. E. Kingman, Jr., Chicago, *Executive Secretary;* Dan J. Anderson, Fort Worth, Texas, *Chairman of the Executive Board.*

$15.00 per Annum Single Copies, $ .75 Prepaid in U.S.
Canada, $15.50; Pan American Countries, $16.50; Foreign, $17.00
Published semimonthly at 600 S. Michigan Ave., Chicago 5, Ill., by the American Veterinary Medical Association. Second class postage paid at Chicago, Ill., and at additional mailing offices.
Contents copyright 1960 by the American Veterinary Medical Association.

CHANGE OF ADDRESS: Send new address (and moving date) 45 days before moving. Include old address as it appeared on previous issues (if possible send label). Do not depend on the post office to forward the JOURNAL.

after more than a *quarter century*..

the original VIROGEN concept

is still the soundest approach to the CANINE DISTEMPER "complex"

Throughout the world, Virogen . . . the first multivalent vaccine developed for protection against the "complex" of canine distemper . . . has established an unsurpassed record of safety and effectiveness. For more than 25 years it has often been imitated, but never duplicated.

When the growing threat of infectious canine hepatitis led to the introduction of Virogen D-H, in 1953, veterinarians quickly endorsed this logical expansion of "the Virogen concept."

Today, the increasing incidence of canine leptospirosis shows the clinical need for a single vaccine that will protect against all three of the major viral infections in dogs . . . as well as the secondary bacterial invaders that may complicate an attack of distemper, hepatitis, or leptospirosis.

Such a vaccine, in keeping with the original Virogen concept of "the greatest possible protection," is Virogen D-H-L.

# VIROGEN D·H·L*

*Trademark for Pitman-Moore Co. Bio. 665 (canine distemper vaccine and infectious canine hepatitis vaccine and leptospira canicola bacterin in bronchisepticus-streptococcus-typhimurium bacterin). Available in 5 cc. and 50 cc. vials.

a research development of

PITMAN-MOORE COMPANY DIVISION
ALLIED LABORATORIES, INC.
INDIANAPOLIS, INDIANA

# Correspondence

December 8, 1959

Dear Sir:

[Your review of my book] mentions fracture of the os pedis of the horse twice (see JOURNAL, Oct. 1, 1959: 400). In 50 years of equine practice I have never seen one, or met a veterinary surgeon who has done so in this country. The only two recorded cases were both caused by external violence—a tractor passing over the foot. Fracture of the small metacarpal bones has *never* occurred to my knowledge and is never quoted. In Britain we race our horses on turf and good trainers never run their horses when the surface is really hard. I understand that in the U.S.A. they race by floodlight on cinder tracks. Whether this affords any explanation I do not know. I welcome any explanation.

s/ R. H. SMYTHE
Nottingham, England

January 5, 1960

Dear Sir:

Your recent letter makes me feel that a Transatlantic storm in a teacup is brewing. We can sum up the matter by saying that conditions on either side of the Atlantic are not identical as anyone who has worked on both sides will agree.

Mr. Smythe has not encountered fractured splints, but North American practitioners are familiar with this condition. Likewise, fracture of the os pedis is commonly encountered in North America, but not in Britain.

In regard to the latter, I do not doubt that a hard or irregular track surface plays an important part in the cause of this condition. With regard to fractured splints, available literature gives nothing in the way of a clue as to its cause. Direct trauma can be ruled out in most cases (as for example, the horse which has had all four front accessory metacarpal bones broken). My own feeling is that in many cases the fracture is associated with strain of the suspensory ligament, but I am not bold enough to state, in print, which is primary and which is secondary.

Fracture of the small metacarpal bone has been reported by Pallister (Proc. Book, AVMA, 1953: 390), Danks (Proc. Book, AVMA, 1952: 348), Hanson (*Canad. J. Comp. Med.*, 22, June, 1958: 197), and Milne (JOURNAL, March 15, 1958: adv. p. 37).

Fracture of the os pedis has been reported by Peters (JOURNAL, June, 1949: 405) and also by Anderson (Proc. Book, AVMA, 1953: 383), Proctor (Proc. Book, AVMA, 1955: 54), and Danks (Proc. Book, AVMA, 1952: 348).

s/ F. J. MILNE, D.V.M., M.R.C.V.S.
Guelph, Ontario

## CONTENTS—*Continued*


**ITEMS**

Disease-Free Pig—Useful Tool but Has Limitations ..... 155
Parenteral Administration of Copper to Cattle ..... 157
Chronology Relating to Use of Diethylstilbestrol in Poultry and Meat Animals ..... 168
Lamb Growth Responds to Selenium .. 163
Penicillin Suppresses Milk Preservative 163
Removal of Radioactive Strontium and Cesium from Milk ..... 170
Attenuated Strain of Canine Distemper Virus in Tissue Culture ..... 173
Heat Aids Venipuncture ..... 179
Comparative Medicine ..... 181
Funds for Research and Development in the United States ..... 181

**from the RESEARCH JOURNAL**

Canine Autogenous Skin Grafting .... 182
Identification of Erysipelothrix insidiosa 182
Contaminants in Newcastle Disease Wing-Web Vaccines ..... 182

**NEW BOOK**

Methods for the Examination of Poultry Biologics ..... 183

**NEWS**

Dr. E. V. Morse Becomes Dean of Country's Newest Veterinary School ... 184
NIH Grant for Urolithiasis Investigation 184
Livestock Sanitary Officials Adopt Constitution ..... 185
U.P. Gets $1 Million to Study Heart and Blood Vessels, Dr. Detweiler to Direct Project ..... 185
A.P.I. Changed to Auburn University .. 185
Among the States and Provinces .... 186
State Board Examinations ..... 193
Deaths ..... 193
Women's Auxiliary ..... 194

**ORGANIZATION SECTION**

Dr. C. E. Hofmann Succeeds Dr. Irwin on AVMA Executive Board .. adv. p. 50
Practice Hazards Studied ....adv. p. 50

**MISCELLANEOUS**

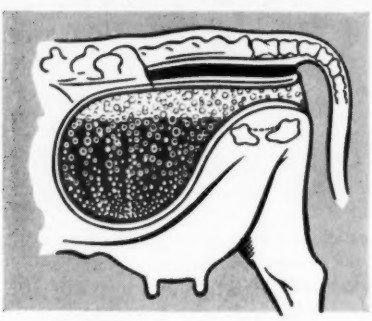
Search Begins for Cause of False Tuberculosis Reactors .....adv. p. 46
Social Security—Reminder to the Self-employed .....adv. p. 46
Student Scientists Require Veterinary Supervision .....adv. p. 63
Tattooing Used for Identification adv. p. 63

# the treatment of purulent metritis

# Nolvasan®

## cap-tabs

**Effervescence disperses the antiseptic to all parts of the uterus**



▶ Nolvasan cap-tab after insertion in uterus. Rapid disintegration, with evolution of gas bubbles which carry a suspension of the agent throughout the uterine fluids and over all the surface within the cavity.

**Result:** *Nolvasan in contact with the infection over the whole endometrium.*



Nolvasan cap-tabs are the ideal treatment for purulent or other forms of metritis.

▶ The active agent, chlorhexidine, a unique broad-spectrum antibacterial compound, is especially suitable as a uterine antiseptic, with high activity against gram-negative and gram-positive organisms.

▶ Antibacterial activity is retained in the presence of blood, pus and uterine fluids, with the solubility of Nolvasan insuring prolonged action.

NOLVASAN IS MADE IN U.S.A. BY ARRANGEMENT WITH IMPERIAL CHEMICAL INDUSTRIES LIMITED

FORT DODGE®

Fort Dodge, Iowa




Another in a series of Research Laboratories advertisements, aimed at boosting farmer understanding of your profession, will soon be read by America's outstanding farmers. This message will reach the nation's farmers and agricultural leaders responsible for nearly 75% of all livestock production.

Entitled, "Should Your Son Be A Veterinarian?", and written by Research Laboratories' farm writer Fred Wenright, this article tells what it takes and what it offers when a young man enters the veterinarian profession.

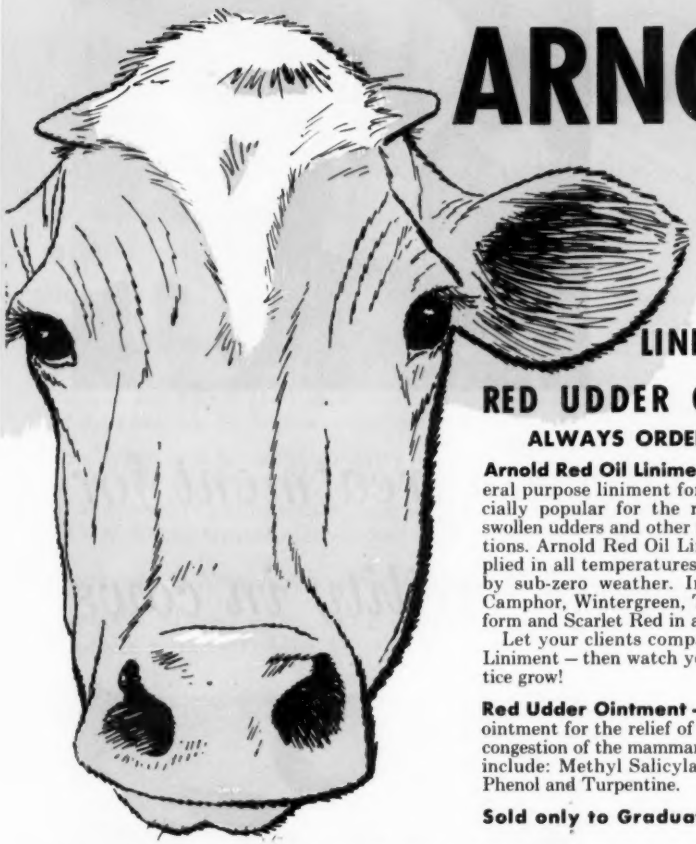
A free copy of the informative AVMA booklet, "Veterinary Medicine as a Career," is offered to every reader.

Send for a copy of the ad today. Display it in your office.

Simply write to...
**Research Laboratories, Inc.**
Saint Joseph, Missouri

*Research Laboratories, Inc. sells its products only to graduate veterinarians*

# "Our Veterinarian has confidence in ARNOLD"



*A Nation-Wide Favorite*

## RED OIL LINIMENT and RED UDDER OINTMENT

**ALWAYS ORDER ARNOLD**

**Arnold Red Oil Liniment —** A potent, general purpose liniment for all animals. Especially popular for the relief of caked and swollen udders and other inflammatory conditions. Arnold Red Oil Liniment is easily applied in all temperatures and is not affected by sub-zero weather. Ingredients include: Camphor, Wintergreen, Turpentine, Chloroform and Scarlet Red in a special oil base.

Let your clients compare Arnold Red Oil Liniment – then watch your dispensing practice grow!

**Red Udder Ointment —** A counter-irritant ointment for the relief of simple post partum congestion of the mammary gland. Ingredients include: Methyl Salicylate, Oil Eucalyptus, Phenol and Turpentine.

**Sold only to Graduate Veterinarians**

***Always Order Arnold — Orders Shipped Same Day Received!***

ARNOLD Laboratories

**NEW CASTLE, INDIANA**

**ARNOLD LABORATORIES – New Castle, Indiana**

Gentlemen:

Please send me the following:

Literature and prices for Red Oil Liniment and Red Udder Ointment ☐

Literature and prices for the following Arnold Products ☐

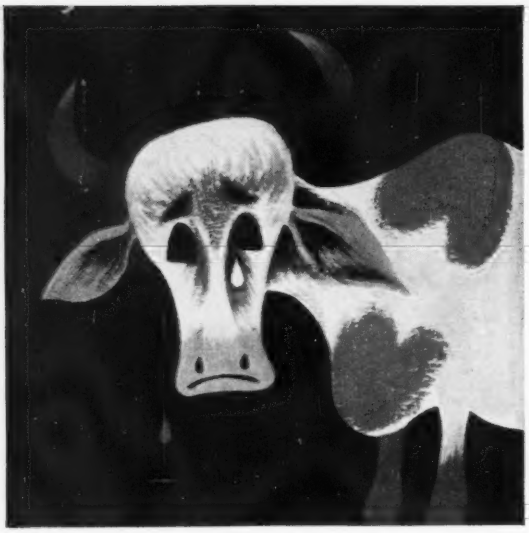
_____

_____

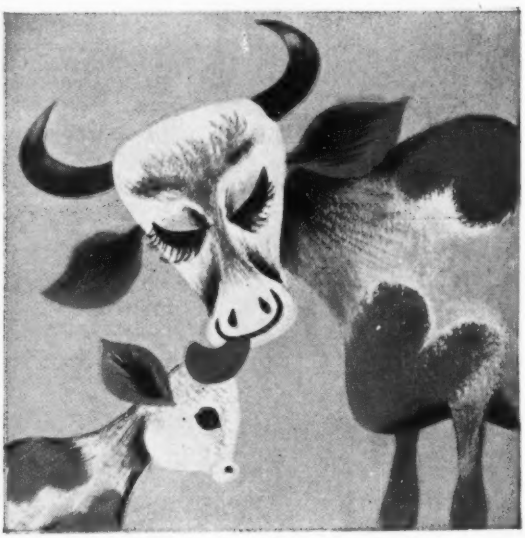
NAME _____

ADDRESS _____

CITY _____ STATE _____



*New, effective treatment for impaired fertility in cows*



**a simple 2-step method with**

# FURACIN®

BRAND OF NITROFURAZONE

*Solution Veterinary SQUEEJET® and Suppositories Veterinary*

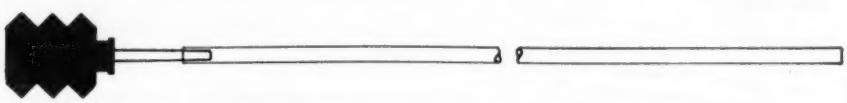
- **reduces services per conception**
- **shortens intervals between calvings**

Impaired fertility in cows, commonly accepted to result from non-specific genital infection, responds dramatically to the 2-step treatment method with FURACIN. In one 3-year study involving treatment with FURACIN Suppositories Veterinary, of approximately one-half of 530 "problem breeders": "The average number of services per conception was 1.88 in the treated and 2.85 in the untreated cows. The average number of days between calvings was 385 in the treated and 447 in the untreated animals."[1]

In a study with 85 subfertile dairy cows, 61.7% of 34 treated with an intra-uterine injection of FURACIN Solution Veterinary conceived at first service, while only 19.3% of 31 treated in an identical manner with 10% saline solution conceived at first service; 40% of 20 non-treated controls conceived at first service.[2]

## *FURACIN 2-Step Method for Impaired Fertility*

**STEP 1.** During estrus, instill, aseptically, the contents of 1 to 3 SQUEEJETS (30 to 90 cc.) of FURACIN Solution Veterinary into the uterus by means of a uterine pipette.



**STEP 2.** During the following 3 weeks, insert 1 FURACIN Suppository Veterinary into the anterior portion of the vagina 3 times each week on alternate days.

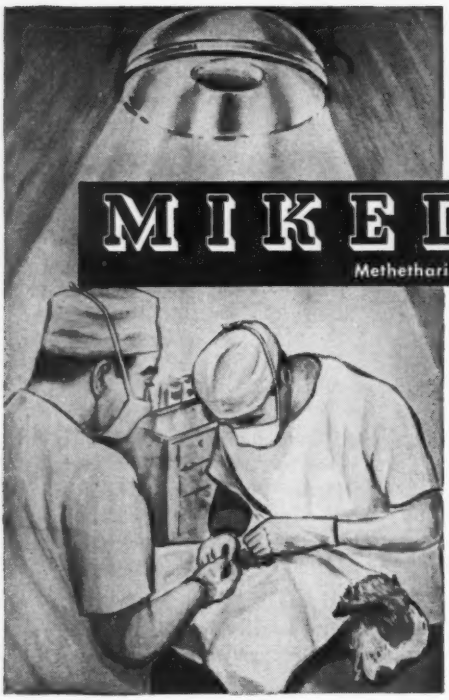


The cow may then be bred during the next estrus.

Supply: FURACIN Solution Veterinary SQUEEJET (30 cc. each), boxes of 12; FURACIN Suppositories Veterinary, boxes of 12.

1.Vigue, R. F., et al.: J. Am. Vet. M. Ass. 134:308 (April 1) 1959.
2.Vigue, R. F.: Personal communication.

EATON LABORATORIES, NORWICH, NEW YORK



**FOR BETTER MANAGEMENT OF BARBITURATE ANESTHESIA**

# MIKEDIMIDE*

Methetharimide, PARLAM TRADEMARK

**THE BARBITURATE ANTAGONIST OF CHOICE**

***...INCREASES RESPIRATION***

***...RESTORES REFLEXES***

***...SHORTENS SLEEPING TIME***

MIKEDIMIDE *is indicated*

73% MORE POTENT THAN PENTAMETHYLENTETRAZOL

**MIKEDIMIDE**

MIKEDIMIDE has a high therapeutic index, and no signs of toxicity have been observed. Animals can be put to sleep or awakened almost at will, by the alternate use of barbiturate and MIKEDIMIDE without apparent harm to the animal.

MIKEDIMIDE is supplied in 10 ml., 60 ml. and 120 ml. multiple dose vials for parenteral use. Literature available on request.

*Patent applied for

- As a STRONG RESPIRATORY STIMULANT in the presence of barbiturates.
- As a STRONG CIRCULATORY STIMULANT in the presence of barbiturates.
- To QUICKLY AMBULATE the animal after surgery.
- To SHORTEN SLEEPING TIME under anesthesia.
- For ROUTINE ANTAGONISM THERAPY against barbiturate anesthesia.
- For EMERGENCY TREATMENT for barbiturate overdose and respiratory depression.
- To ACHIEVE A "SAFE PLANE" of anesthesia during and after prolonged surgery.

**YOU MAY ORDER DIRECT, or we can drop ship and bill through your distributor.**

| | EACH | DOZ. |
|---|---|---|
| 'MIKEDIMIDE' 120 ml. multiple dose vial | $9.00 | $102.60 |
| 'MIKEDIMIDE' 60 ml. multiple dose vial | 4.75 | 54.15 |
| 'MIKEDIMIDE' 10 ml. multiple dose vial | 2.00 | 22.80 |

**Freight allowed on all orders over $25. Orders totaling $100 or more, less 5% extra discount.**
**TERMS: 1/10 NET 30 F.O.B. Englewood, N. J.**

TARGET POINT CHEMOTHERAPY

Parlam CORPORATION ● **266 S. Dean Street, Englewood, New Jersey**

**SOLE CANADIAN DISTRIBUTOR:** Veterinary Medical Supply Co. of Canada, 4700 Prince of Wales, Montreal

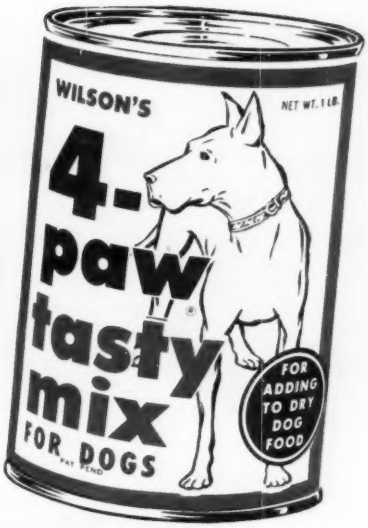
"Pioneer in veterinary medicine for target point chemotherapy"

# **New** meat product for instant mixing with dry dog foods

# Now available in 1 lb. cans

*(packed 24 to the case)*

Still available in 6½ lb. cans
100 lb. pails, or 490 lb. drums




## 4 BIG ADVANTAGES

**1. ECONOMY**



4-PAW is lower in moisture than other meat products such as horse meat or beef, because some water is removed from 4-PAW during processing. By mixing one part 4-PAW with two parts Dry Dog Food (kibbled or meal) and adding warm water to obtain consistency desired, you have top nutrition at minimum cost.

**2. CONVENIENCE**



No cooking—you MIX 4-PAW just as it comes from the can. Completely sterile in the can, 4-PAW needs no refrigeration. After opening, treat like meat. Even the size container is custom-planned for you. Each can is a full 16 ounces, packed 24 to a case. Also available in 6 lb., 8 oz. cans; 100 lb. pails; and 490 lb. drums.

**3. AVAILABILITY**



If you have been feeding horsemeat, you have probably worried about supplies and high costs. 4-PAW is the progressive answer. It will continue to be in good supply at reasonable prices because it is made of meat by-products from government inspected food animals.

**4. NUTRITION**



96% of 4-PAW consists of carefully selected meat by-products including generous amounts of liver from our own controlled, meat packing plants. Other ingredients supply calcium, phosphorus and vitamins.

| | | | |
|---|---|---|---|
| Meat by-products | 96% | Phosphoric acid | 1.4% |
| Dicalcium phosphate | 2.4% | Red Iron Oxide | 0 1% |
| Cod Liver Oil | 0.05% | | |

*(Distributor Inquiries Invited)*

**Ask your local distributor, your Wilson & Co. Representative for prices and free folder, or write: Wilson & Co., Inc., Meat Packers, Prudential Plaza, Chicago 1, Ill.**

**4-PAW IS THE GREATEST SMALL ANIMAL NUTRITION DISCOVERY IN RECENT YEARS**

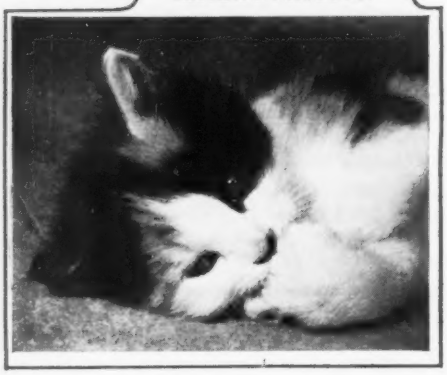
ACETONEMIA



HYPOGLYCEMIA



MALNUTRITION



in almost
*all* cases

where there is
need for an

*immediate*
source of
energy
and prompt
repair of
depleted
tissues

**AMINO-*Plus***
is indicated

PARASITISM



In both large and small animals, when rapidly-effective therapy is needed for debilitation, malnutrition, or dehydration . . .

**AMINO-Plus** provides an immediate supply of assimilable amino acids, to aid in restoration and hydration of tissues . . . *plus* crystalline B vitamins, to replace essential nutritive elements . . . *plus* dextrose, to elevate blood sugar and tissue glycogen and to supply an immediate source of energy.

**AMINO-Plus** offers exceptional flexibility of administration. It may be used subcutaneously, intraperitoneally, or intravenously, depending on the particular situation. As a diluent, you can use electrolyte solutions, liquid antibiotics, sterile water, serum, calcium solutions, or additional dextrose, as needed.

**AMINO-Plus** is stable indefinitely in the form supplied . . . a desiccated powder . . . and remains potent without refrigeration for at least thirty days after it is reconstituted.

**AMINO-Plus** is available in cartons of six vials. Each vial, when reconstituted, provides 250 cc. of parenteral solution.

PNEUMONIA



DYSTOCIA





PITMAN-MOORE COMPANY DIVISION
**ALLIED LABORATORIES, INC.**
INDIANAPOLIS, INDIANA

# news from Washington . . .



FROM THE AVMA WASHINGTON OFFICE

**Health Manpower Inventory Now Being Taken**

The Headquarters of Selective Service System informed the AVMA that it is becoming increasingly important that the System take action to maintain a current inventory of health manpower resources. Local boards are endeavoring to obtain information on physicians, dentists, veterinarians, and osteopaths. The cooperation of all veterinarians, and state and local veterinary medical associations in supplying current information to selective service boards upon request will be appreciated. The inventory is not intended for use as an indication of availability of persons in these professions, but is to be maintained for use in an emergency situation when it will be vital to the survival of our nation that men in these skills can be located rapidly.

**Federal Budget Items for the Fiscal Year 1961**

*The USDA* budget included $68,981,700 for all direct research (ARS), under salaries and expenses, $48,775,600 for plant, animal diseases, and pest control (this includes $15,477,000 for brucellosis eradication), and $21,562,700 for meat inspection. This is a total of $139,320,000.

*The A.M.S.* requested $10,203,000 for poultry inspection.

*The Dept. of H.E.W.* budget request includes $765,500,000 for P. H. S., $400 million for the N.I.H., and $25 million for construction of health research facilities on a matching grant basis.

*The F.D.A.* requested $16,852,000, about a 20 per cent increase over funds appropriated last year. This will provide for more inspectors, modernization of field offices, evaluation of a greater volume of new drugs, and considerable testing of antibiotics, insulin, and coal-tar colors.

**New Bills Introduced Regarding: Agriculture**

Rep. Abernethy (D., Miss.) introduced a bill (*H.R. 9300*) to support agricultural research at state experimental stations through federal-grant funds on a matching basis. Fund grants would be available for acquisition of land and for construction, acquisition, and remodeling of buildings and laboratories.

Rep. Moulder's (D., Mo.) bill (*H. R. 9353*) would prohibit moving in interstate commerce any live cattle or sheep fed, treated, or otherwise implanted with stilbestrol unless they have been branded or marked as prescribed by the Secretary of Agriculture.

Senators Humphrey and McCarthy (D., Minn.) (*S. 2751*) and Rep. Roosevelt (D., Calif.) (*H.R. 9553*) have moved to increase authorized maximum under a special milk program, not to exceed $85 million and $90 million for fiscal years 1960 and 1961, respectively.

***(Continued on adv. p. 20)***






*FOR A HIGH MEASURE OF PROTECTION AGAINST SWINE ERYSIPELAS LOSSES*

## Affiliated Brand

# Anti-Swine Erysipelas Serum

# Erysipelothrix Rhusiopathiae Vaccine

Serum available in 100, 250 and 500 cc bottles; Vaccine available in 5 and 15 cc vials.

Affiliated Brand ANTI-SWINE ERYSIPELAS SERUM is a specific for the acute disease.

Affiliated Brand ERYSIPELOTHRIX RHUSIOPATHIAE VACCINE used with Anti-Swine Erysipelas Serum establishes active immunity (usually to market-age) against erysipelas . . . the choice of many Veterinarians to control acute outbreaks of the disease.

Affiliated Brand erysipelas serum and vaccine must pass exacting potency, safety and purity tests.

Affiliated BRAND

AFFILIATED LABORATORIES CORPORATION

*White Hall, Illinois*

The Gregory Laboratory, Inc. — Corn Belt Laboratories, Inc.
Grain Belt Supply Co. — The National Laboratories Corp.

**Produced for and sold to graduate veterinarians only**

# NEW GAINES: first meal that mixes better than expensive kibble!

DEVELOPED IN THE GAINES RESEARCH KENNELS

•

TESTED IN 14 INDEPENDENT KENNELS




**New crunchy nuggets keep their shape for hours . . . won't mush or cake, even in boiling water!**

Yes, new "controlled" texture means easier mixing . . . easier eating. Gaines gives your dogs a new taste, too: the flavor of real beef!

New Gaines is highly digestible. Specially processed to prevent stool problems. Better-than-ever in body, to keep your dogs at their winning best. And each nugget contains the same homogenized balance of essential nutrients that has helped generations of champions to a longer prime of life.

All these advantages—in the first meal that mixes even better than kibble! Discover New Gaines for yourself—soon!

**GAINES MEAL:** *The "Longer Prime of Life" Dog Food*




New Gaines Meal has a bright new bag: 25- and 50-lb. sizes




SEE OTHER SIDE

FIRST CLASS
PERMIT NO. 162
Battle Creek, Mich.

BUSINESS REPLY MAIL
No postage stamp necessary if mailed in the United States

4¢ POSTAGE WILL BE PAID BY—

**GAINES PROFESSIONAL SERVICE DEPARTMENT**
General Foods Corporation
275 Cliff Street
Battle Creek, Michigan

# JOIN THE NEW GAINES KENNEL PLAN!

## Here's how it works:

1. Enroll now in the plan. With membership, professional feeders will receive a booklet of Kennel Plan coupons—each worth $7.50 when redeemed.
2. Purchase New Gaines Meal in any quantities, from any outlet. Clip and save the Weight Identification Marker cut from the top of each 25- and 50-lb. bag.
3. When the weight indicated by these markers totals 500 lbs., send us the markers, together with one Kennel Plan coupon. We'll send you our check for $7.50: *a savings of $1.50 per hundred lbs. on the best meal money can buy.*

It's that simple! And the savings go on and on, with each additional 500 lbs. you purchase. Start saving now! Complete and return the handy coupon today!

New crunchy nuggets keep their shape for hours . . . won't mush or cake, even in boiling water. They're better tasting, improved with the flavor of real beef!

New Gaines is highly digestible. Specially processed to prevent stool problems. And each nugget contains the same homogenized balance of essential nutrients that has helped generations of champions to a *longer prime of life.*

**All these advantages—now *available to you at a savings of $1.50 per 100 lbs.!***

NEW GAINES MEAL

*The "Longer Prime of Life" Dog Food*




Box V-3 (Please print or type)

Gaines Professional Service Department
275 Cliff Street, Battle Creek, Michigan

Gentlemen: Please send me complete information about the Gaines Kennel Plan, including application blank.

Name _____

Name of kennel (if any) _____

Address _____

City _____ Zone _____ State _____

As a Kennel Plan member, you'll also receive:

- Expert advice and information from the Gaines Dog Research Center.
- Valuable pedigree & health records, plus other useful kennel aids—all without cost.
- Free listing in the nationally distributed Directory of Breeding, Boarding, and Training Kennels.

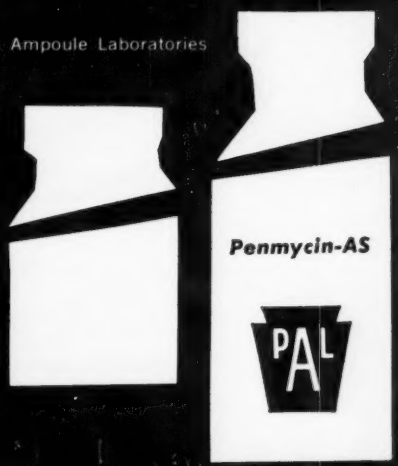
A full line of Potent, Long-Life

## ANTIBIOTICS from Philadelphia Ampoule Laboratories

including:

### PENMYCIN-AS

(Procaine Penicillin G, 400,000 Units With Dihydrostreptomycin 0.5 Gm. per 2 cc. of solution.)




Also available:

Penicillin Aqueous
(300,000 units per cc.)

Penicillin Tablets (buffered)

Dihydrostreptomycin Solution

Solution of Streptomycin and Dihydrostreptomycin

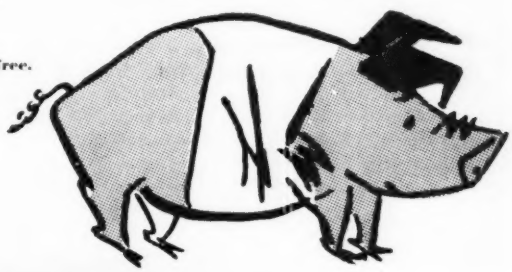
Steroids-Cortisone, Hydrocortisone, Prednisolone

## IRONDEX-100 ®

Optimum Pig Anemia Preventive

- Single Injection—Minimum cost
- Prompt and Sustained Utilization
- Complete Utilization (approaches 100%)
- Greater Resistance to pneumonias, enteritis and scours
- 12½% Reduction in Mortality over Oral-Iron-Treated Pigs
- Less Toxic than Oral or Former Injectable Iron Preparations.

**For information, get our catalog—it's free.**





**Veterinary Products Division**

**PHILADELPHIA AMPOULE LABORATORIES, INC.**

400 GREEN STREET, PHILADELPHIA 23, PENNA.

*Quality Pharmaceuticals and Research Since 1930*

## WASHINGTON NEWS—*Continued*

**Social Security**

Rep. Reuss (D., Wis.) introduced a bill (*H.R. 9372*) to increase social security benefits, liberalize the work clause, provide disability benefits without regard to age, and improve the earnings of Social Security Trust Funds. To pay for increased benefits, the bill would increase the earnings base for tax purposes from the present $4,800 to $6,000 and increase social security taxes paid by the employee and the self-employed.

Rep. Harrison (D., Va.) and Rep. Brewster (D., Md.) introduced identical bills (*H.R. 9323, H.R. 9450*) to eliminate "age-50" requirements for disability insurance payments. Senator Cooper (R., Ky.) introduced a similar, but not identical, bill (*S. 2763*).

Rep. Herlong's (D., Fla.) bill (*H.R. 9327*) would increase to $2,400 the amount of outside earnings permitted each year without deductions from benefits. A similar bill (*H.R. 9513*) by Rep. Rains (D., Ala.) would permit $3,000.

**Civil Service**

Rep. Broyhill (R., Va.) introduced a bill (*H.R. 9312*) to increase rates of pay of classified, postal, and other officers and employees of the federal government.

Rep. Lesinski (D., Mich.) wants to amend the Civil Service Retirement Act (CSRA) so that the term, "basic salary," includes bonuses, allowances, overtime pay, Sunday and holiday pay, (*H.R. 9339*).

Sen. Moss (D., Utah) introduced a bill (*S. 2750*) to amend section 1(e) of CSRA to permit inclusion of military pay in computing average salary for annuity purposes.

**Miscellaneous**

Rep. Andrews (D., Ala.) introduced a bill (*H.R. 9673*) to authorize a ten-year program for construction of veterinary medical educational facilities.

**Correction:** The FDA has listed 182 chemicals safe for use in foods, not 82, as printed in the Jan. 1 JOURNAL, adv. page 14.

NEW
PRODUCT REPORT
FROM
ABBOTT LABORATORIES

# BYOGIC™

## ANTIBACTERIAL AND ANTICHOLINERGIC

**BYOGIC** combines the antibacterial action of Erythrocin® with the highly specific anticholinergic activity of Tral®. **BYOGIC** is indicated for the treatment of such common canine and feline diseases as:

- **upper respiratory infections**
- **respiratory-enteritis complex**
- **pneumonia**
- **tracheo-bronchitis (kennel cough)**
- **symptoms associated with enteritis and gastroenteritis**
- **diarrhea**
- **symptoms associated with hyperacidity, hypermotility, and certain spastic conditions of the stomach and intestines**

**BYOGIC** the usual dosage for dogs, and cats is one capsule once or twice daily. For medium and large breeds add one capsule for every additional 25 to 40 pounds body weight. Dosage may be repeated daily as indicated. For laboratory animals: ½ to one capsule daily for rabbits; one or two capsules daily for monkeys, depending on size. **BYOGIC** has been closely studied by a number of investigators*. Their reports indicate excellent results. **BYOGIC** is a white powder supplied in slip-capsules containing 100 mg. Erythrocin and 20 mg. Tral. Bottles of 100. List No. 8623. Byogic powder may be added to the patient's food from the capsule. The unbroken capsule can be administered directly by the oral route. **BYOGIC** is available *NOW*. You may order it from your Abbott representative, your nearest Abbott branch, or direct from the Veterinary Department of Abbott Laboratories. Now, and in the months ahead, **BYOGIC** could be life-saving. Order a supply today.

*Complete clinical literature available on request.

®BYOGIC—ERYTHROCIN®, ABBOTT AND TRAL®, ABBOTT.
®ERYTHROCIN—ERYTHROMYCIN, ABBOTT.
®TRAL—HEXOCYCLIUM METHYLSULFATE, ABBOTT. 911162

ABBOTT





*effective therapy*
*for respiratory diseases of bacterial origin*

**VIA FEED**

# TERRAMIX® A-B-D-25

oxytetracycline with vitamins

*broad-spectrum antibiotic therapy*
**PLUS** *four essential vitamins*

*each lb. contains:*
25 Gm. oxytetracycline HCl activity
2,000,000 units vitamin A
200,000 units vitamin $D_3$
2 Gm. riboflavin
4 mg. vitamin $B_{12}$
with expeller soybean oil meal as the diluent



**Available in 5 lb. canisters.**
*Sold to Veterinarians Only.*

**VIA WATER**

# COSA-TERRAMYCIN®

oxytetracycline with glucosamine and vitamins
FORTIFIED SOLUBLE POWDER

*broad-spectrum antibiotic therapy with glucosamine*
**PLUS** *eight vitamins*

*each lb. contains:*
25 Gm. oxytetracycline HCl
500,000 I.U. vitamin A
100,000 I.U. vitamin $D_3$
200 mg. vitamin K
150 units vitamin E
2,000 mcg. vitamin $B_{12}$
800 mg. riboflavin
4,000 mg. niacinamide
1,500 mg. pantothenic acid



**Available in 1/4 and 1/2 lb. bottles and 5 lb. canisters.**
*Sold to Veterinarians Only.*

Pfizer *Science for the world's well-being™*

**DEPARTMENT OF VETERINARY MEDICINE**
**PFIZER LABORATORIES,** Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N.Y.

# *TWO BIG EXTRAS

with

**ferajeet 80**

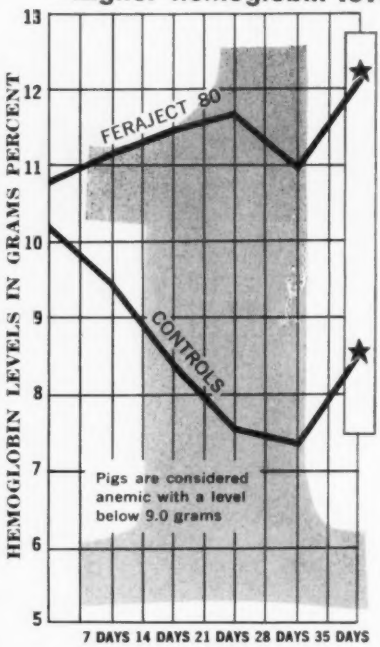
The exclusive formula of Feraject 80, with its equivalent of 160 mgs of elemental iron per 2 cc dose and its Zinc, Cobalt, Vitamin B12 and Vitamin B6, make it an excellent choice for the effective treatment of baby pig anemia. It provides better weight gains and disease resistance.

Feraject 80 is available in attractive styrafoam displays in both 30 and 100 cc sizes — one dozen per display.

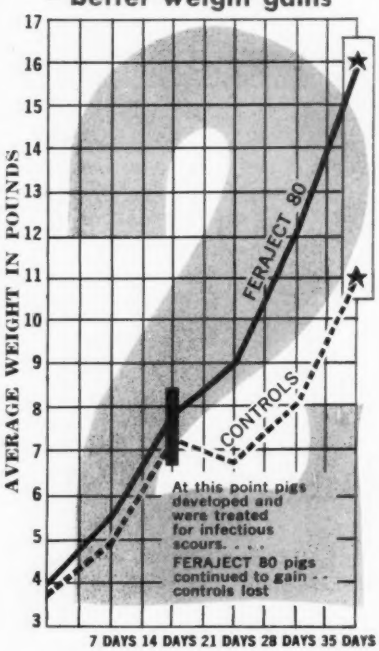
**AVAILABLE TO VETERINARIANS EXCLUSIVELY.**

**DIAMOND LABORATORIES**
DES MOINES, IOWA

*** higher hemoglobin level**




*** better weight gains**



# KEN-L-BISKIT




—all the nutrients dogs are known to need*—in convenient, easily-mixed kibbled form—baked for better digestibility and regularity.

## All this, and ECONOMY too!

Cup for cup, Ken-L-Biskit provides more nutrition than most other dry dog foods . . . . so you can feed LESS because this food does MORE

Real economy like this beats being penny-wise, doesn't it?

**GET KEN-L-BISKIT in the thrifty 25 or 50-lb. BAG!**

*Ken-L-Biskit ingredients include: horse meat meal • meat meal • liver meal • feeding oatmeal • natural grains • animal fat • riboflavin supplement • Vitamin $B_{12}$ supplement • irradiated yeast • Vitamin A feeding oil and other valuable nutrients.

# IN SMALL ANIMALS



# urised®

## *for control and therapy of* URINARY INFECTIONS

Nephritis, cystitis, urethral spasm, calculi . . . all are benefited by the unique dual action of URISED. Antispasmodic and antibacterial, it usually stops pain in a matter of minutes . . . overcomes common pathogens and sterilizes urine, without toxic manifestations or side effects.

Soothes tissues and reduces pus-cell and bacterial count through the combined efficacy of methenamine, salol, methylene blue and benzoic acid . . . while atropine, hyoscyamine and gelsemium keep smooth muscle relaxed all along the urinary tract, and quickly check painful spasm. Excellent for prolonged therapy . . . effective in either acid or alkaline urine . . . nontoxic and economical.

***Sold only to graduate Veterinarians***

***Free clinical trial supply on request***

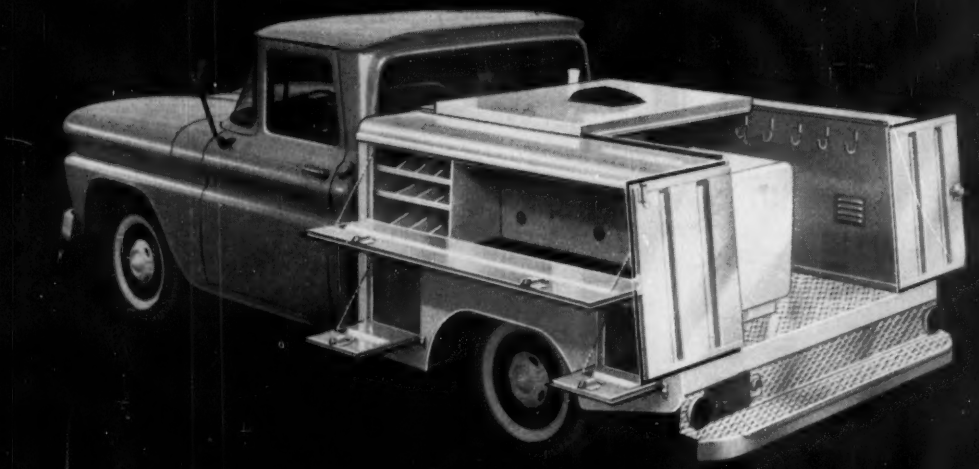
***Veterinary Division***

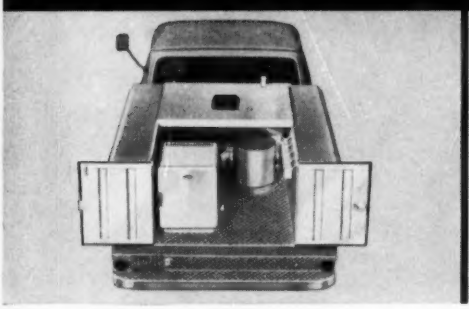
**CHICAGO PHARMACAL COMPANY** Chicago, Ill. • San Francisco, Calif.

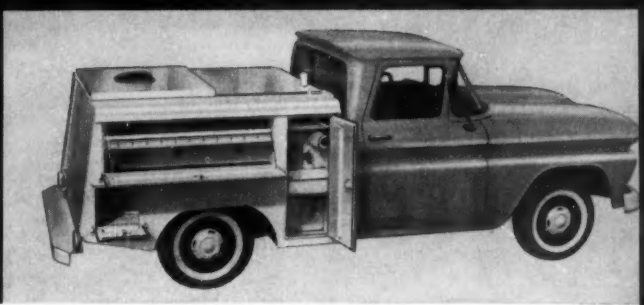
# *Service-Master*

VETERINARIANS SERVICE BODY

## carries a complete laboratory and office to the patient







- Heated, lighted compartments for drugs, instruments and supplies
- Enamelled steel sink with hot and cold running water and detachable hose
- Silent, efficient L-P gas refrigerator for storage of perishables
- Dustproof, weatherproof, key-locking compartment doors and cargo area roof

**Doctor:** Service-Master on a ½-ton chassis provides you with a matchless combination that saves time and effort and reduces transportation costs on every call. There's abundant storage space for everything you'll need . . . arranged in orderly fashion, ready for instant use in the field. And, higher road clearance of the truck enables you to take your complete laboratory over roads and terrain which would be impassable with a passenger car.

In addition to weathertight, pilfer-proof compartments and cargo area, the Service-Master Veterinarians Body provides built-in sink with quick-coupling hose — water heater — circulating hot air system — refrigerator — fresh water tank — L-P gas system and tank storage — interior lights — bins and shelves.

Every detail, every feature of this specially-equipped unit is designed to assist you in the field. Standard size fits any ½ ton chassis, old or new. Models can also be furnished for ¾, 1 and 1½ ton chassis. For completeness, for the best time-saving design and equipment, for the finest quality construction and durability you're way ahead with Service-Master. Compare and you'll see why.

*Descriptive literature, with price information and the name of your nearest distributor, is yours for the asking.*

**McCABE-POWERS BODY COMPANY**

5900 NORTH BROADWAY ST. LOUIS 15, MISSOURI

Plants and offices in Hazelwood, Mo., Berkeley and Los Angeles, Calif. Portland, Oregon.




# with Pard Balanced Protein Variety

WHEN you not only love dogs, but they are your livelihood, too—their health is of the utmost importance.

We at Swift know that, because we share the same affection and responsibility for dogs. Swift Research Veterinarians and Nutritionists have made the nutrition of dogs their life work. Whenever you feed or recommend any Pard product, you can have the same confidence you have in the care you yourself give to dogs.

Beef, and beef by-products are the source of animal protein in Pard, and beef, of course, is synonymous with good protein quality. In addition, both regular Pard and Pard with Beef Gravy contain soy grits, cereals, vitamins and minerals to supply —in just the proper ratio— *all* the nutrients dogs need. In Pard Crunchers, the high protein meat meal is also supplemented with milk, fish, soy, and cereal by-products—to give the same high nutritional value as the canned Pards.

"Beef up" your dog diets with Pard and be sure of the balanced protein variety so essential for good dog health, growth and reproduction.

**LIKE YOU . . . SWIFT RESEARCH VETERINARIANS ARE DEDICATED TO THE HEALTH AND HAPPINESS OF DOGS**

**PARD CRUNCHERS with Beef Gravy**

Economy in 20- and 50-lb. bags and smaller sizes. Mixes quickly and cleanly.




**Swift**

105TH YEAR

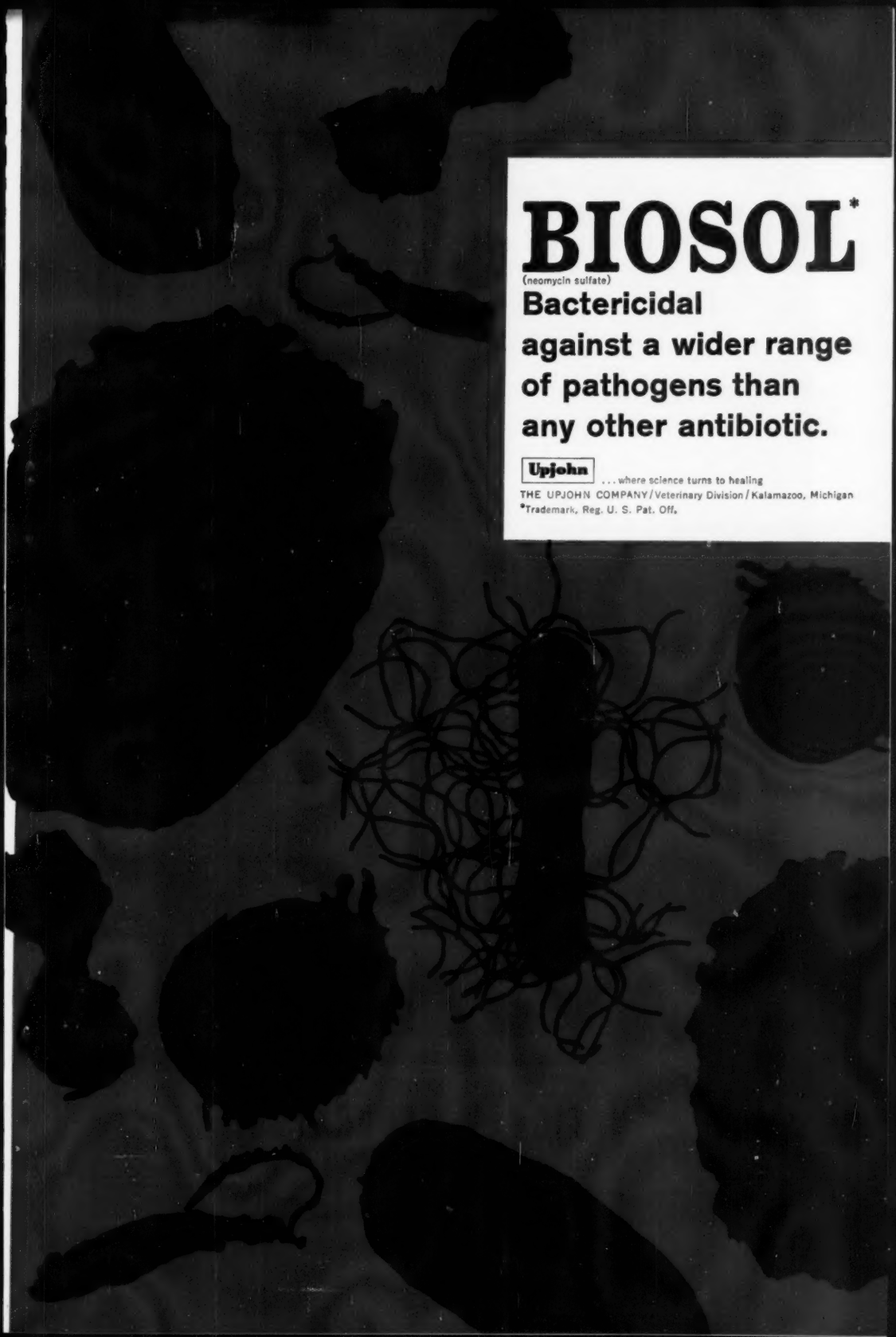
*To Serve Your Profession Better*




**NOW two kinds of Pard in cans**

Variety—alternate regular Pard and new Pard with Beef Gravy.

***Use and recommend PARD products with confidence.***


BIOSOL*
(neomycin sulfate)
Bactericidal
against a wider range
of pathogens than
any other antibiotic.
Upjohn
... where science turns to healing
THE UPJOHN COMPANY / Veterinary Division / Kalamazoo, Michigan
*Trademark, Reg. U. S. Pat. Off.

*prevention*

# Rx for pig anemia . . .

*treatment*



new **Copron 12** POWDER

a unique formula effective against:
**pig anemia**
**parakeratosis or dermatosis**

New from the research department of NLC is COPRON 12, formulated to supply the necessary mineral and vitamin balance together with residues of Terramycin and Streptomycin cultures to promote growth. Contains Zinc Carbonate—more available zinc.

**A BALANCED FORMULA**

Each pound contains: Iron, Cobalt, Copper, Calcium, Iodine, Phosphorus, Potassium, Magnesium, Manganese, Zinc, Vitamin A, Vitamin D, Pantothenic Acid, Riboflavin, Vitamin B-12, with residues of Streptomycin and Terramycin cultures in a special base.

**directions:**

COPRON 12 is easy to administer. Dust on bedding and soil, especially under heat lamp. Sprinkle freely on udder of sow while pigs are nursing—COPRON 12 will adhere to udder, whether wet or dry. Mix one to two pounds of COPRON 12 in 100 pounds of pig starter or rolled oats.

**supplied:**

12/1 lb. ..... $ 8.10
1/25 lb. ..... 15.00

NLC

**SERVING THE GRADUATE VETERINARIAN EXCLUSIVELY**

THE
**NATIONAL LABORATORIES**
CORPORATION
KANSAS CITY

**Affiliated**
CO-OWNED BY NLC

The Cyanamid Foundation recently completed a controlled experiment to determine if the immune response to vaccination with CYVAC® Distemper Hepatitis vaccine was interfered with when antiserum was used simultaneously.

Twenty susceptible pups were divided into two groups. One group was given CYVAC only, the other, CYVAC plus distemper-hepatitis antiserum, 1 cc., per pound of body weight. When tested, 31 days following vaccination, both groups had developed good immunity to the two diseases. Antiserum did not interfere with the immune response to either disease.

Your Cyanamid representative will be happy to give you a copy of this report.

Veterinary Professional Service Department
American Cyanamid Company
30 Rockefeller Plaza
New York 20, N. Y.

CYANAMID
CYVAC
VACCINE

## Tell your clients:

# "begin saving baby pigs Before farrowing!"



*Healthy litters and sows come from a planned, complete-cyclic feeding program.*

Too few hog breeders realize that anemia, scours, rickets, parasites, TGE, erysipelas and other pig-killers are directly or indirectly caused by poor nutrition *before the pig is farrowed.* Weak baby pigs are easy targets for disease — and are also the most frequently lost by the sow laying on them.

Clearly, your clients should know that the easiest and cheapest method of keeping pig losses low is by proper sow nutrition, even before breeding. Tell them how RIBAD II and CON-O-Mineral fortify pre-breeding rations by furnishing ample Vitamin A plus a balance of other essential nutrients. Then, during the gestation and lactation periods, when Vitamin A requirements go up five- and ten-fold, CON-O-Mineral and RIBAD II keep sows in the best condition to develop strong, disease-resistant pigs. This means more pigs weaned...and at better weights.

Get the full story of better profits through better nutrition in the all-new VpC LIVESTOCK FEED BOOK — facts and formulas for both the veterinarian and his client. Write for your free copies now!

**VITAMINERAL PRODUCTS CO.**

**PEORIA, ILLINOIS**

Via-D-Mineral...CON-O-Mineral...Viamineral...RIBAD...Via-Z-Mineral...VpC Dog Food Supplement

SOLD ONLY THROUGH VETERINARIANS FOR OVER 40 YEARS

# HELP US KEEP THE THINGS WORTH KEEPING



It doesn't take much to remind you of why you want peace. You know it in your heart every time you look at your daughter. You know we *must* keep the peace.

But knowing isn't enough. It takes *doing*. Fortunately there is something you can do.

Peace costs money. Money for strength to keep the peace. Money for science and education to help make peace lasting. And money saved by individuals to help keep our economy strong.

Your Savings Bonds, as a direct investment in your country, make you a Partner in strengthening America's Peace Power. But the most important thing they earn is peace. They help us keep the things worth keeping.

Think it over. Are you buying as many as you *might?*

## HELP STRENGTHEN AMERICA'S PEACE POWER

## BUY U. S. SAVINGS BONDS

*The U.S. Government does not pay for this advertising. The Treasury Department thanks The Advertising Council and this magazine for their patriotic donation.*

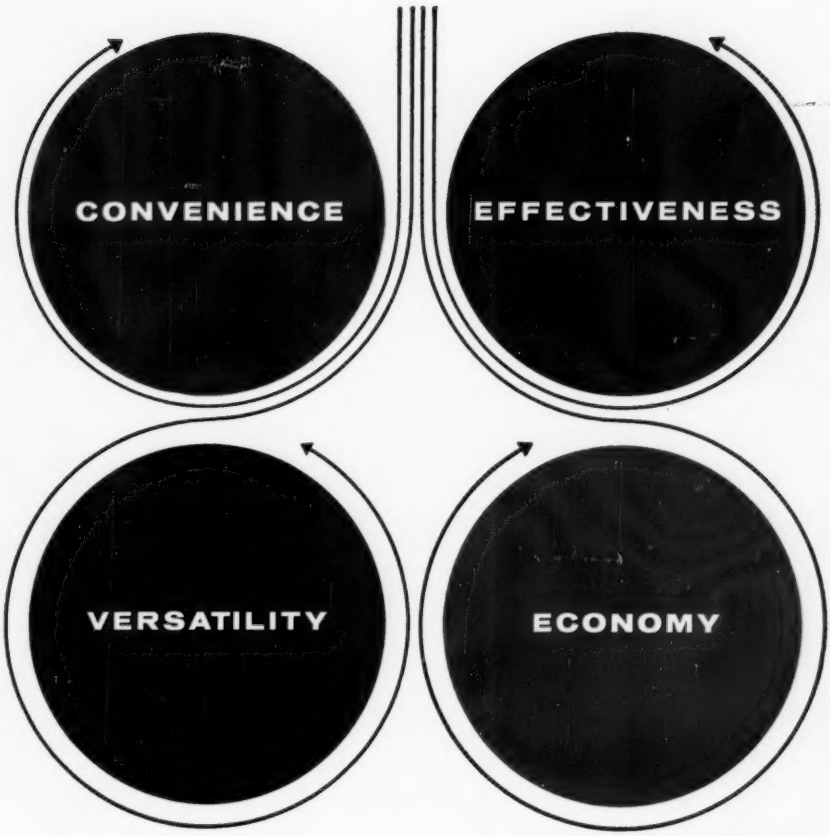
# TROUBLE BACK AT THE RANCH...

A herd of cattle had a virulent infection, and needed special serum in a hurry. The local vet's supply was low. But a quick phone call to a nearby town ... and quick delivery by Greyhound Package Express ... brought the serum shipment through in time.




## IT'S THERE IN HOURS ...AND COSTS YOU LESS!

When getting it there in a hurry means **business**, you can count on Greyhound Package Express! Your packages go anywhere Greyhound goes, by dependable Greyhound buses on their regular runs. That means you get service **seven days a week...24 hours a day...weekends and holidays!** And you can send C.O.D., Collect, Prepaid—or open a charge account. For information, call any Greyhound bus station, or write Dept. 24B, 140 South Dearborn St., Chicago 3, Ill.




**A PRACTICAL SOLUTION** to the problem of diverse requirements of veterinary practice, calling for a broad-spectrum antibiotic designed for • convenience • economy • versatility • and effectiveness against the widest range of pathogens.

# LIQUAMYCIN®

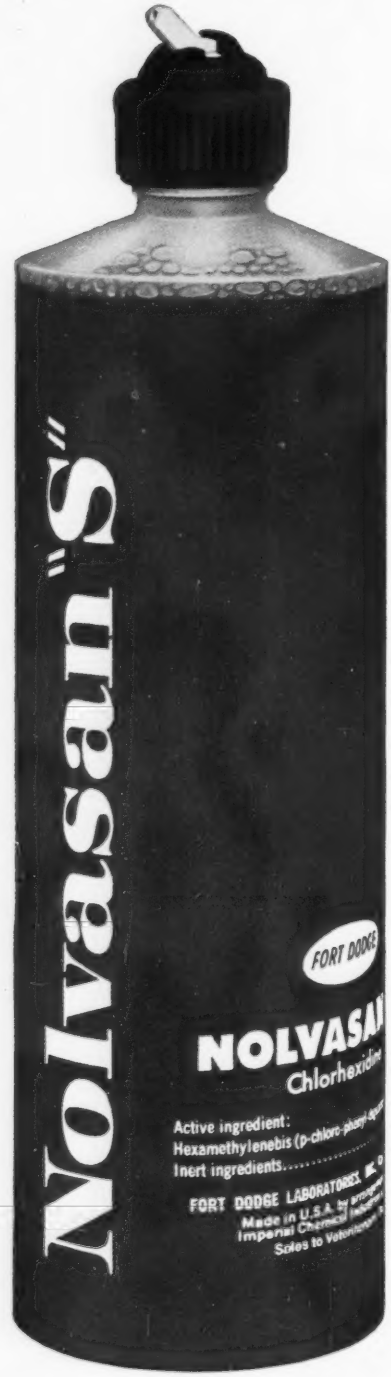
OXYTETRACYCLINE SOLUTION

Sold to Veterinarians Only

Supply: 480 cc. bottles—12 Gm. oxytetracycline in solution—25 mg./cc. one gallon bottles—94.6 Gm. oxytetracycline in solution—25 mg./cc.

Pfizer Science for the world's well-being™

Department of Veterinary Medicine
Pfizer Laboratories, Div., Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.




# A new look for an old friend

▶ Now, Fort Dodge's widely-used scented disinfectant—in a handy 1-pint plastic squeeze bottle. But, no change in the exclusive Nolvasan "S" formula—the same powerful bactericidal, virucidal and detergent properties, plus the fragrant scent which effectively masks odors. *Equally adaptable to hospital use or for dispensing.*

FORT DODGE®

Fort Dodge, Iowa

"Nolvasan" T.M. Reg. U.S. Pat. Off.
Made in U.S.A. by arrangement with
Imperial Chemical Industries Ltd.

Vol. 136

No. 4

February 15, 1960

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

*The Transenteral Entrance of the*

# Virus in Hog Cholera

H. C. H. KERNKAMP, D.V.M., M.S.

FOLLOWING discovery of the hog cholera virus, its mode of transmission became a subject of investigation in many different laboratories. From the results of the studies and observations, it was concluded that the portal of entry of the virus, under natural conditions, was by way of the digestive tract. Along with this conclusion went the assumption that the virus enters the mouth with the feed or drink or with soil, litter, or other contaminated substance and that it passes to the stomach and intestines from where invasion of the body occurs.

For the past several years, a more specific answer to the question of route of infection has been the objective of investigations in four different laboratories. Studies undertaken by several investigators showed that infection results when the virus is inspired and absorbed by the respiratory epithelium.[1,2] These investigators were successful also at infecting pigs when the virus was brought into contact with the oral mucous membranes[2] and the tonsillar area of the pharynx.[1] In the case of transmission by lungworm larvae, the small intestine is the locale of infection.[3]

The investigation reported here deals with attempts to determine the regions in the digestive tract where the virus enters the mucosa and is transported to tissues to which it shows affinity — the transenteral entrance.

## Materials and Methods

Pigs used in the experiments varied in age between 9 and 11 weeks and in weight between 34 and 72 lb. They were susceptible to hog cholera. Three, and sometimes 4, pigs were used in each experiment. Each experiment was repeated 3 or more times which means a separate group of pigs was used each time an experiment was repeated. For the most part, pigs used in a single experiment were litter mates.

Each of the experiments covered a lapse of time divisible into the following periods: (1) pre-exposure, (2) exposure, and (3) challenge periods. The pre-exposure period was utilized for obtaining body temperatures and hemogram values that would serve as base values for changes that occur in the exposure and challenge periods. It covered at least 3 days (the day of exposure and 2 or more preceding days). Duration of exposure and challenge periods

The author is indebted to Drs. J. A. Arnold and Edward Usenik of the Division of Veterinary Surgery and Radiology for the surgical assistance in connection with introducing virus into the small intestines of pigs.

Dr. Kernkamp is professor in the Division of Veterinary Pathology and Parasitology, College of Veterinary Medicine, University of Minnesota, St. Paul.

Approved for publication as paper No. 4219, Scientific Journal Series, Minnesota Agricultural Experiment Station, St. Paul.

varied and depended upon results following exposure to the virus. Rectal temperatures were obtained each day and hemograms at intervals of 2 and 3 days and always on the days of exposure and challenge. The hemogram consisted of a total and differential white cell count, hematocrit and hemoglobin values, and the sedimentation rate. Total white blood cell counts proved to be a valuable aid in following the clinical course of the disease and in diagnosis. Necropsies were conducted on all pigs that died.

Hog cholera blood plasma or serum containing the virulent virus used in these studies was obtained from two sources: (1) from pigs used to confirm and establish the occurrence of cholera in an affected drove, and (2) from producers of virus used in the vaccination of pigs by the serum-virus method. Amount of blood containing virulent virus used to effect exposure varied from 1 to 2 ml., and 2 ml. was injected intramuscularly to challenge pigs.

Experiments were designed to learn whether transenteral entrance of hog cholera virus occurs via mucous membranes of the mouth, the stomach, or the mesenteric part of the small intestine.

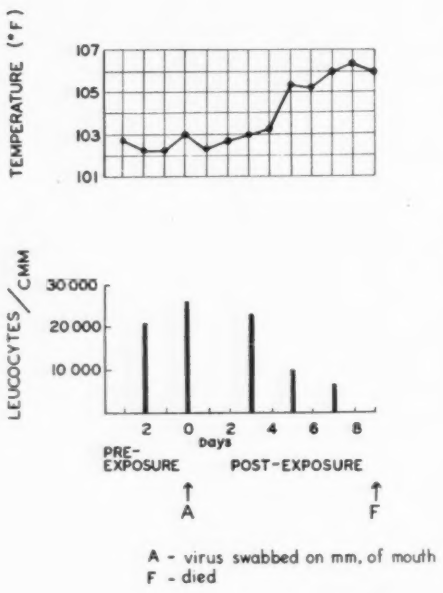



**Fig. 1 — Record of temperature and leukocyte count of pig that died from hog cholera following oral exposure by swabbing virus on mucous membranes (mm).**

Exposure that involved applying the virus on the mucous membrane of the mouth was simple and quickly performed. The mouth was held open with a speculum and tongue surfaces, cheeks, and hard palate were swabbed with a pledget of cotton soaked with virus. To prevent injuring the oral membranes so that virus would not enter a wound, the bite-bars of the speculum were covered with tape. The pledget was soaked in 2 ml. of virus but, by crude approximation, only about 1 ml. was spread on the membranes of the mouth. The swabbing operation, including the excitement resulting from restraint, provoked copious salivation which caused the pig to swallow as soon as the speculum was removed. The operation required less than 30 seconds.

Since it was observed early in the study that the transenteral entrance of the virus readily occurred in the mouth, it seemed important to conclusively establish this as a fact. For this reason, the experiment was repeated 8 times using a total of 30 pigs. Since it was shown that infection results when virus is applied on the oral membranes, preliminary studies were undertaken to localize areas of the oropharynx where invasion occurs. The tonsils, retropharyngeal lymph nodes, and buccal mucous membrane were removed from pigs at intervals, following oral exposure, and then examined for presence of virus. Pigs were slaughtered and tissues collected 1, 4, and 12 hours after exposure. The tissues were then stored at −10 C. until prepared for injection into susceptible pigs. Prior to use, the tissues to be examined were thawed, minced, and ground in a Ten Broeck tissue grinder. This "juiced" tissue was filtered through gauze and mixed with a small amount of physiologic saline solution to facilitate intramuscular injection.

Exposures that involved depositing virus in the stomach required that none of the virus should contact any of the epithelium anterior to the stomach. This objective was accomplished by passing an equine catheter of suitable length (porcine stomach tube) into the stomach and, through it, a smaller and longer tube (polyethylene tubing No. PE 200) to extend beyond the end of the stomach tube. The virus, 2 or, in some cases, 3 ml., was deposited in the stomach via the tube and the tube was flushed with

an equal amount of saline solution before it was withdrawn. The small tube was withdrawn first and followed by withdrawal of the larger or stomach tube. This experiment was repeated 4 times, using a total of 14 pigs.

To effect direct exposure of the mucous membrane of the small intestine to the virus, surgery was utilized. The jejunum-ileum was exteriorized under anesthesia, and a 2-inch, 12-gauge hypodermic needle was thrust caudad through the gut wall and into the lumen. The needle served as a canula for a piece of polyethylene tubing (No. PE 200) that was inserted 12 inches into the bowel. The virus, 2 or, in some cases, 3 ml., was deposited in the intestine, and the tube was flushed with 2 ml. of physiologic saline solution. Upon withdrawal of the tubing and needle, the wound was closed with a purse-string suture. The bowel was then returned to the peritoneal cavity, the peritoneum and skin wounds closed with linen sutures, and the pig permitted to regain consciousness. None of the pigs showed adverse affects from the surgery. The experiment was repeated 3 times using 3 pigs in each experiment.

**Results and Discussion**

*Exposure Via Mouth.* — Of the 30 pigs exposed to hog cholera by applying the virus on the mucous membrane of the mouth, 21 developed the disease and died or were killed when moribund. They showed clinical signs and pathologic lesions typical of hog cholera. On the second day following exposure, the temperature of 1 pig was 104.6 F. It continued to rise each day for the next 4 days, reaching a maximum of 106.4 F. The leukocyte count decreased from 22,000 cells/cmm. in the preexposure period to 4,000 cells/cmm. day 7 of the exposure period. This was the shortest incubation period for any of the pigs that became ill and died from hog cholera. The incubation period was as long as 8 days for 2 pigs. Onset of the disease was determined by postexposure temperature rise of 2 F. or more above average preexposure temperatures. For most pigs, the incubation period was 4 to 5 days (fig. 1).

Nine pigs survived oral exposure and challenge. They developed an immunity to hog cholera in response to virus applied by spreading it on the mucous membrane of the mouth. A transient but definite "reaction" occurred in 6 of the pigs. It began on the second or third day following exposure and subsided 2 or 3 days later and was characterized by a temperature rise that increased to levels of 104 F. or more, and remained elevated for 2 or 3 days before returning to a normal range. During this time, leukocyte counts decreased to values of 9,000/cmm. and less but, by the eighth day, they had returned to normal. From the eighth to the eighteenth day, tempera-

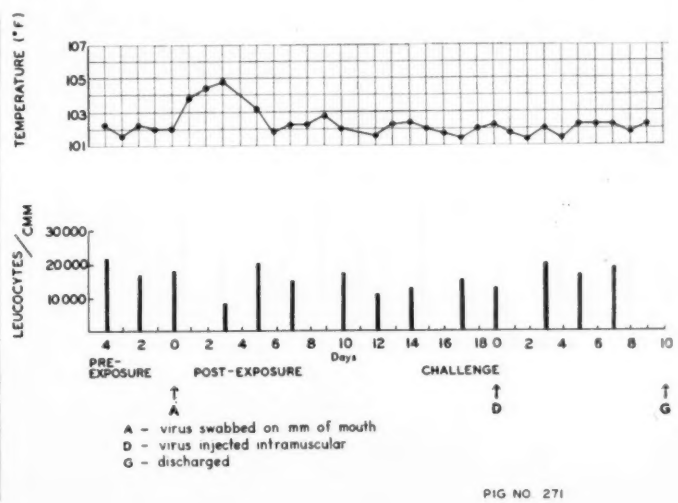



**Fig. 2 — Record of temperature and leukocyte count of pig that survived oral exposure (mm) and challenge. Postexposure "reaction" is evident as a transient leukopenia and elevated body temperature.**

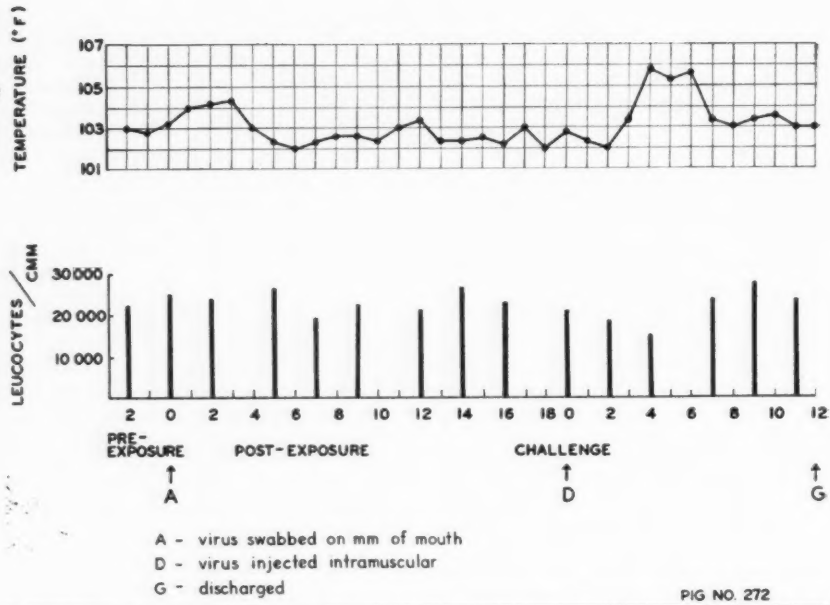



**Fig. 3 — Record of temperature and leukocyte count of pig that survived oral exposure (mm) and challenge. Postchallenge "reaction" is evident.**

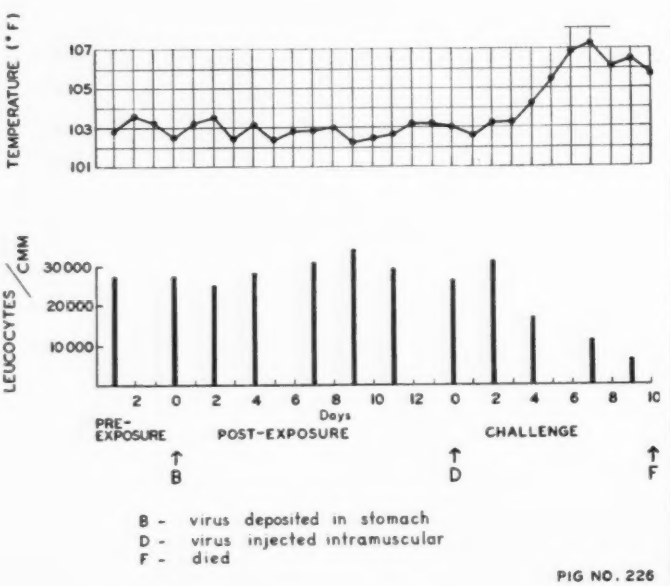



**Fig. 4 — Record of temperature and leukocyte count of pig that survived exposure via stomach but died from cholera following challenge with virulent virus.**

tures and hemograms were normal. Five of 6 pigs survived challenge without significant changes in temperature and hemogram (fig. 2). On the third day following challenge, the temperature of 1 pig began to rise and reached 105 to 106 F. on the fourth, fifth, and sixth days. A moderate leukopenia occurred. The temperature and leukocyte count returned to normal by the eighth postchallenge day and continued to be normal for the remainder of the experiment (fig. 3). Three pigs survived oral exposure and challenge, and at no time did they show a fever or a leukopenia suggestive of a "reaction."

It appears from results with these 30 pigs that hog cholera virus was absorbed by membranes of the oropharynx, and a disease-producing component was transported to tissues for which it showed affinity. An antigenic component was transported to tissues, resulting in production of antibodies. In no case did the virus fail to invade the body and cause a significant measurable response. For example, 21 pigs responded by developing hog cholera, and 9 pigs survived because of the antibodies (immune substance) it provoked. Apparently, absorption occurred quite rapidly because mechanical manipulations incident to the exposure, such as placing the speculum in the mouth, swabbing, and excitement of restraint, stimulated salivation which caused swallowing immediately upon removal of the speculum. This salivation and swallowing would tend to remove the virus from the surface of the membranes promptly. The virus apparently was noninfectious after entering the stomach (*see* below).

*Exposure Via Stomach.* — Fourteen pigs were exposed by depositing virus directly in the stomach. None of them developed clinical hog cholera from this exposure. When challenged, 8 of 14 died from hog cholera (fig. 4) and 6 were immune. There seems to be little doubt that immunity developed in response to the virus deposited in the stomach when they were exposed. A postexposure "reaction" occurred in each of them (fig. 5) which was similar to the reaction described for 5 pigs exposed by spreading virus on the oral membranes (fig. 3).

Since none of the pigs developed cholera when the virus was introduced into the stomach, it is probable that the disease-producing component was either destroyed by gastrointestinal secretions or was not absorbed and was passed in the feces. A similar fate appears to have occurred to the antigenic component with 8 of the pigs, but in 6 the antigenic component was not adversely affected.

*Exposure Via Small Intestine.* — None of 9 pigs exposed by depositing virus in

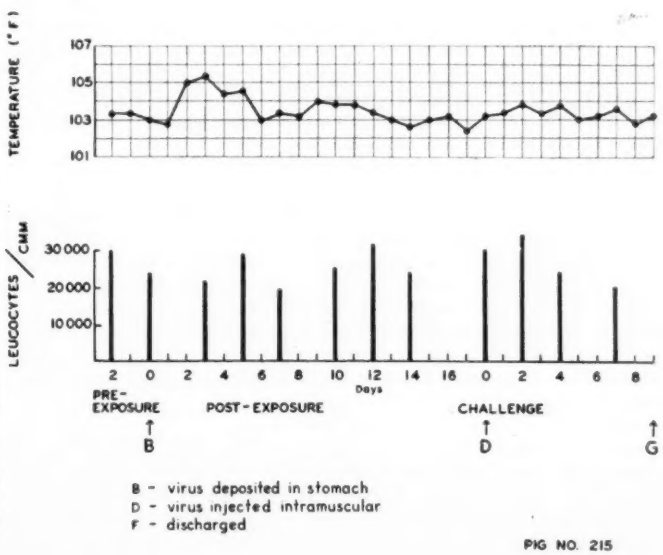



**Fig. 5 — Record of temperature and leukocyte count of pig that survived exposure via stomach and challenge with virulent virus. Postexposure "reaction" is evident.**

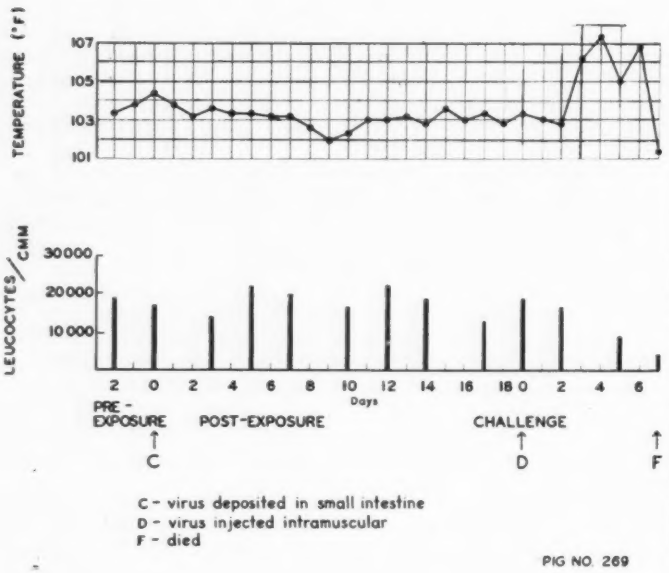



**Fig. 6 — Record of temperature and leukocyte count of pig that survived exposure via small intestine but died from cholera following challenge with virulent virus.**

the small intestine developed hog cholera. Eight of the 9 showed no clinical signs of a disturbance, e.g., hyperthermia, leukopenia, anorexia, diarrhea, or physical weakness. In the 1 remaining pig, a transient "reaction" occurred following exposure. It began on the fourth day and continued for 3 days and then subsided for the remainder of the test period. This pig, and 1 from the group of 8, survived challenge. Seven of 9 pigs subjected to intestinal exposure died from hog cholera when challenged (fig. 6).

Results of introducing virus into the small intestine were comparable with those when exposure was effected via the stomach. In some cases, it appeared that the virus was completely destroyed by the pancreatic or intestinal secretions or, if unaffected, failed to be absorbed. In 2 cases, the antigenic component was not affected.

*"Sites" in the Oropharynx Where the Transenteral Entrance of the Virus Occurs.* — Preliminary studies attempting to determine whether the virus invades the body at 1 or all of 3 sites in the oropharyngeal region (tonsils, retropharyngeal lymph nodes, buccal mucous membrane) have not yielded results suggesting that absorption occurred. Cholera did not result from the injection of "tissue juice" expressed from the tonsils of pigs whose oral membranes were swabbed with virus 1, 4, and 12 hours prior to slaughter. Similar results were obtained with the "juice" of the retropharyngeal lymph nodes from the pig slaughtered 12 hours after the oral exposure and also when the "juice" of the buccal mucous membranes, swabbed 4 hours before testing, was examined. The susceptibility of the test pigs was later proved with a known virulent virus and all died from hog cholera. It is not known whether the "juices" contained any of the antigenic component of the virus. If some was present, a sufficient amount was not available to provoke immunity.

#### Summary and Conclusion

Experiments to produce hog cholera by depositing 2 or 3 ml. of virus in the stomach or in the small intestine of cholera-susceptible pigs failed on every attempt. The disease-producing and antigenic properties of the virus appear to have been destroyed in 15 of 23 pigs exposed in this manner. They succumbed to cholera when virus was injected intramuscularly at a later date. Only the disease-producing component of the virus was destroyed in 8 pigs. They were immune when challenged and,

it appears, the immunity was provoked by the virus used at the time of exposure.

Results were quite different where the virus was applied by spreading on the membranes of the mouth. Of 30 pigs exposed in this manner, 21 developed hog cholera and died; 9 survived the exposure and were immune when challenged. The immunity, it appears, was stimulated by the virus swabbed on the oral membranes.

Preliminary attempts to localize "sites" in the oropharynx where the transenteral entrance of the virus occurs, although far from conclusive, failed to show by the methods employed that virus was present in the tonsils, buccal mucous membranes, or retropharyngeal lymph nodes, 1, 4, or 12 hours after it was swabbed on the surface of the oral membranes.

The "reaction" which occurred in some pigs a few days following exposure represented a time when the forces of infection and the forces of defense both were developing, with the latter eventually becoming more powerful. The forces of defense in this case were the production of antibodies or immune substance.

Insofar as the mouth is a part of the digestive tract, the results support the concept held for many years that the portal of entry of the virus in hog cholera is the digestive tract.

**References**

[1]Dunne, H. W., Hokanson, J. F., and Leudke, A. J.: The Pathogenesis of Hog Cholera. 1. Route of Entrance of the Virus into the Animal Body. Am. J. Vet. Res., 20, (1959): 615-618.

[2]Schwarte, L. H., and Mathews, J.: Transmission of Hog Cholera Via Respiratory Tract. North Am. Vet., 35, (1954): 671-672.

[3]Shope, R. D.: The Swine Lungworm as a Reservoir and Intermediate Host for Hog Cholera Virus. J. Exptl. Med., 107, (1958): 609-622.

## Disease-Free Pig—Useful Tool But Has Limitations

Education has become an important part of the disease-free pig program.

Most producers lack knowledge of the term "disease-free," the scope of the program, and the necessary management practices for maintenance of healthy stock. A producer must know which diseases have been eliminated from disease-free stock he acquires and must be taught that his hogs are not immune to all ailments or to carelessness in management.

Movement of and among hogs must be restricted. In one case, disease was introduced by a neighbor visiting disease-free hog lots. Mortality increased to 29.2 per cent in the disease-free pigs compared with 8.2 per cent on 2 other farms. Average weight was held at 147 lb. in 154 days compared with averages of over 200 lb. on 4 other farms.

Disease-free herds must not be gained at the sacrifice of either best meat-type lines or less desirable animals. The disease-free program is no short-cut in management and no solution to problems of raising and selling better pork.—*Nat. Hog Farmer, 4, (Dec. 1959): 4.*

*A Method for*

# Bovine Semen Analysis

J. A. DEUBLER, V.M.D.
M. J. DEUBLER, V.M.D., PH.D.

WITH THE increasing use of artificial insemination, it is apparent that there is need for an accurate method of determining the potential fertilizing capacity of semen samples. Visual estimation of motility gives highly erratic results. A method has been developed by which the actual number of active spermatozoa can be counted.[1] For use with bovine semen, this method has been modified to use 2.9 per cent sodium citrate as the diluent. The number of active and inactive sperm in millions per cubic centimeter is first determined, and then the exact percentage of motility and the absolute motility are calculated.

BULL SEMEN COUNT

Name of bull ..... Reg. No. .....
Breed ..... Date of birth .....
Owner ..... Address .....
Date sample collected ..... Volume of raw sample .... c.c.
Diluter: ..... Egg ..... Milk ..... Other .....

Macroscopic examination:
Volume ..... c.c.
Viscosity: Normal ..... Increased ..... Decreased .....

Microscopic examination:

| | Active | Inactive |
|---|---|---|
| 1. | ..... | ..... |
| 2. | ..... | ..... |
| 3. | ..... | ..... |
| 4. | ..... | ..... |
| 5. | ..... | ..... |
| Totals | ..... | ..... |
| Average | ..... | ..... |

Calculations: Average active cells/c.c ..... millions
" inactive cells/c.c ..... millions
Total cells/ c.c ..... millions
Active/c.c, × 100 = Motility .....%
Total/c.c.
Active cells/c.c. × c.c. in sample = Absolute motility ..... millions

Remarks:
Examiner .....
Date .....

**Fig. 1—Work sheet for bovine semen analysis.**

## Procedure

Materials needed are semen sample, microscope, hemocytometer, white blood cell diluting pipette, 2.9 per cent sodium citrate diluent, vaseline, and mimeographed work sheet (fig. 1).

The semen sample and diluent are placed in a water bath at 70 F. After a few minutes, a 1:20 dilution is made by drawing the semen to the 0.5 mark on the white blood cell pipette, and then filling with diluent to the 11 mark on top of the bulb. This is the same procedure followed in a routine leukocyte count. After 30 seconds of gentle mixing, the first 2 drops are discarded, and the diluted semen is flooded onto both sides of the counting chamber. The edges of the chamber are then sealed with vaseline. The slide now is ready for immediate microscopic examination; high power is used, with a 10 x ocular lens and a 40 x objective lens.

The spermatozoa are counted in 5 groups of the 16 smallest squares in the "red" field. The four corner groups and the fifth in the center are counted, as in a

Dr. J. A. Deubler is a practitioner in Newtown, Pa. Dr. M. J. Deubler is in the clinical laboratory, Section in Medicine, School of Veterinary Medicine, University of Pennsylvania, Philadelphia.

This paper was presented in part before the Section on General Practice, Ninety-Fifth Annual Meeting, American Veterinary Medical Association, Philadelphia, Pa., Aug. 18-21, 1958.

We thank Dr. E. J. Farris for many personal communications and valued assistance, and Dr. H. Beecher Watson, Blackstone, Va., for his time and effort in making many of the analyses.

[1]Farris, E. J.: Human Fertility and Problems of the Male. Author's Press, Palisades Park, N. J., 1950.

routine red blood cell count. Active and inactive spermatozoa are counted in these 5 sections of both chambers of the hemocytometer, using the mimeographed form designed for this examination. The average of both active and inactive cells is computed. This represents the total number of active and inactive sperm in millions per cubic centimeter. The active cells per cubic centimeter divided by the total cells per cubic centimeter x 100 equals the percentage of motility. The active cells per cubic centimeter times number of cubic centimeter in sample gives the absolute motility in millions.

Most workers in artificial insemination agree that inseminations should be made using a 0.5- to 1.0-cc. dose containing 10 million live sperm. Poor conception rates following use of fresh and frozen semen led to this method of evaluating semen. It is quick and accurate, and can be used on the farm.

The above procedure is used for analyzing diluted semen, either fresh or frozen. If the count is to be made on raw semen, a dilution of 1 part semen in 50 parts sodium citrate diluent is made. This is done by adding 0.1 cc. of semen, using a micropipette, to 5.0 cc. of diluent. Then the above procedure is followed. The result is multiplied by 50. The absolute motility of the raw sample will serve as a guide in diluting the sample for field use or freezing, so that 1 cc. of the diluted sample will contain a minimum of 10 million active sperm.

As a preliminary report, we offer the following working hypothesis: If a count of 10 million active sperm per cubic centimeter can be made consistently, this semen will give results equal to the breeding efficiency of the herd in which it is used. Samples containing 5 million active sperm per cubic centimeter will be less than half as efficient. Samples containing less than 5 million active sperm per cubic centimeter only occasionally will produce conception.

## Parenteral Administration of Copper to Cattle

Copper glycine alone, of a large number of copper compounds tested, was found satisfactorily useable, via subcutaneous injections into various sites, in normal and copper-deficient cattle of varied ages over a 2-year period.

The intramuscular route was found unsuitable, especially in beef cattle, but subcutaneous administration into the brisket region proved satisfactory.

The subcutaneous route also provided better adsorption into the liver, although both routes were good. Uptake of copper by the liver is related to the animal's copper status and type of feeding.

Two to three injections a year should control copper deficiency even under severe conditions of herbage-induced deficiency.

Giving the dam copper glycine 1 to 4 months before calving increased copper content in the newborn calf's liver.

Repeated injections of multiple doses of copper glycine (3,600 mg. Cu to 3 cows over a 7-month period) produced no toxic effects, indicating that parenteral administration of this preparation of copper glycine has a wide margin of safety for cattle.—*Vet. Rec., 71, (1959): 797.*

# United States Livestock Sanitary Association—1959

The sixty-third annual meeting of the U.S.L.S.A. was held at the Sheraton-Park Hotel, San Francisco, Calif., Dec. 16-17, 1959, with Mr. Francis G. Buzzell, head of the Maine Division of Animal Industry, presiding.

Officers elected for the coming year are Dr. James R. Hay (OSU '39), Chicago, Ill., president; Dr. Arthur P. Schneider (WSU '38), Boise, Idaho, first vice-president; Dr. Wilmer L. Bendix (ONT '28), Richmond, Va., second vice-president; Dr. Thomas J. Grennan, Jr. (TEX '42), Allenton, R. I., third vice-president; and Dr. Ralph A. Hendershott (OSU '17), Trenton, N. J., secretary-treasurer.

The meeting was attended by more than 300 persons, about half of whom were veterinarians. Next year's meeting is scheduled to be held in Charleston, W. Va.

## Excerpts from Meeting Reports

### Disease Control and "Integration"

**John Herrick, *Ames, Iowa***

Veterinarians associated with contract livestock production, either as disease control specialists or as businessmen, should consider the following fundamental points:

1) Period of contract: The period of contract should be certain—both starting and termination dates should be spelled out.

2) Renewal provisions: Some contracts call for automatic renewal—all parties in the contract should have the same privileges.

3) Cancellation provisions: Few contracts call for cancellation by the livestock producer—there should be equal rights for all parties in the contract.

4) Assignment of interest: Some contracts prevent either party from assigning his duties to another party without written consent. A livestock producer may desire to sublet part of his contract or turn it over to another party. Such provisions should be in the contract.

5) Legal relationship of parties: The livestock producer should know whether he is a farmer, employee, or independent contractor. If he is an employee, the integrator may be liable for actions of the farmer that cause injuries or losses to a third party. The same holds true for social security contributions. If the livestock producer were an independent contractor, this would not hold true.

6) Supplies furnished by each party: The contract should state specifically the items to be furnished by each party.

7) Management decisions: The livestock producer should understand the extent to which the integrator can make management decisions.

8) Producer payments: The contract should state specifically prices, markets, and bonuses if the latter are to be paid for the livestock producer.

9) Arbitration provisions: If disputes arise, the contract should contain provisions for settlement without long and costly court procedures.

### Reservoirs and Vectors of Hog Cholera Virus

**L. H. Schwarte, *Ames, Iowa***

The early studies on the transmission of hog cholera and the persistence of the activity of the virus under natural conditions furnished basic information of possible reservoirs and vectors of hog cholera virus.

The vectors of hog cholera virus include insects, parasites, infected meat and meat products, infected carcasses, feeds, pens, buildings, and equipment. Trucks, railroad equipment, stockyards, and man have contributed to the spread of the infection.

Subsequent studies indicated that infected swine carcasses, whether buried or unburied, served as reservoirs of active virus for months in the cooler seasons of the year. The summer months provided conditions highly favorable for putrefaction which is conducive to destruction of

hog cholera virus. Preserved and smoked pork containing live virus may be a reservoir of infection. Certain parasites, such as the hog louse and lungworm, may act as reservoirs and intermediate hosts for the virus. At least one wildlife species, the raccoon, has been found capable of acting as a reservoir of hog cholera virus.

Positive experimental evidence that the virus may exist in a masked or inactive form (in lungworms), which under certain conditions can be activated to pathogenicity by stress factors (ascarid infection), contributes much to our knowledge of hog cholera virus. Early research and clinical observations which lack confirmation should be reinvestigated in view of present knowledge.

The questions raised regarding many of our field problems may be answered soon when more basic information on hog cholera virus is available. Postvaccination problems and failure to develop satisfactory immunity under field conditions may be understood better when more is known about the wide variation in characteristics of different virus strains. The reservoirs and vectors of hog cholera virus should be given careful consideration in any program designed for control and eradication of hog cholera.

## Field Control of Anaplasmosis

**L. O. Mott, E. E. Saulman, T. O. Roby, W. H. Martin; *Washington, D.C., and Beltsville, Maryland***

Our present scientific knowledge of anaplasmosis indicates that control of natural mechanical transmission is the key to the solution for helping southern cattlemen prevent anaplasmosis losses. Disease-transmission control depends on three principal factors: (*a*) the infectivity level of the blood of carrier cattle, (*b*) the insect vector population densities for any given area, and (*c*) the lapse of time between insect feedings on infected and susceptible cattle. Control of any or all of these factors has an immediately favorable effect on reducing the disease transmission rate.

Variations in the degree of anaplasmosis infection extend from the subclinical or inapparent type to the acute and peracute types. Testing has shown that considerable anaplasmosis may be found in some herds in which the disease has not been considered a widespread infection or even recognized.

Limited anaplasmosis field trials lead us to conclude that complement-fixation testing and segregation of reactors from nonreactors have greatly reduced the probability of losses and infection in enzootic areas of the southeastern United States.

## Public Health Significance of Drugs in Food

**Charles G. Durbin, *Washington, D.C.***

The Food, Drug, and Cosmetic Act is a consumer-protection law. It forbids interstate commerce in adulterated or misbranded food, drugs, devices, and cosmetics. Foods and drugs for animals are subject to the same legal restrictions as are foods and drugs for man. Specifically, these include new drugs, certifiable antibiotics, pesticide chemicals, and food additives.

All of us who are interested in livestock production must be concerned primarily with the question of whether food for man obtained from treated animals can have any possible adverse effect on the human consumer. If there are any questions of safety to be resolved, they must be resolved always in favor of public health protection.

From a public health viewpoint, there are two questions concerning the administration of drugs to food-producing animals. First, is there any possible harm to the consumer of products from treated animals? Second, what benefits occur from their use? We think that the benefits, such

as availability of more and better foods at less cost to the producer and consumer as well as the control of many animal diseases transmissible to man, must not result in any hazard to man. When properly used, according to label directions, we feel certain that drugs in current use do not endanger public health.

## Comparison of Serological Tests for Bovine Leptospirosis

**Leif Ringen, *Pullman, Washington***

A preliminary study was made of the hemolytic (HL) test as compared with the agglutination-lysis (AL) and the capillary tube (CT) tests for serologic diagnosis of bovine leptospirosis. The results obtained were based upon serum samples collected at periodic intervals from experimentally infected animals and upon serum samples collected from field cases and sent to our laboratory for serologic diagnosis.

Using leptospiruria as an indication of active infection, the following results were obtained: (*a*) The AL test became positive within 2 weeks postexposure and remained at a diagnostic level long after the animal had recovered from active infection. (*b*) Four weeks' postexposure time was required for the CT test to become positive in a few animals, and it may become negative as early as 8 weeks postexposure. The titer remained at a diagnostic level for at least 20 weeks in 25 per cent of the animals. (*c*) Not all animals developed a positive reaction to the HL test; those animals that developed leptospiruria showed a positive HL reaction. The HL test became negative within 8 weeks after cessation of demonstrable leptospiruria.

The following results were obtained from individual serum samples sent to our laboratory for serological diagnosis: (*a*) If these serums were positive to the HL test, they were also positive to the CT and AL tests. (*b*) If they were positive to the CT test, they were also positive to the AL test but not necessarily to the HL test. (*c*) If they were negative to the AL test, they were negative to the other two. (*d*) If they were negative to the CT test, they were negative to the HL test but not necessarily to the AL test.

## Summary of Controlled Research with Strain 19

**C. A. Manthei, *Beltsville, Maryland***

Strain 19, which is a member of the species *Brucella abortus*, was one of the first modified microorganisms used on a wide scale in the United States as an immunizing biologic product. The immunity produced by strain 19 in cattle is relative and seldom absolute, a condition which is not unlike that associated with most other immunizing biologic products. The success of strain 19 vaccination is dependent on maintaining the stability of strain 19, injection of a viable vaccine, vaccination of heifer calves at the proper age, immunogenic response of the individual animal and limiting the degree of exposure by removal of reactors from the herd, good herd management and proper sanitation.

The characteristics of the modified strain 19 are low pathogenicity, relatively high antigenicity, and relatively high immunogenicity, and are maintained by the careful selection and propagation of smooth-intermediate type colonies. Maximum viability of the vaccine can be maintained only by storage under refrigeration (4 to 7 C.), regardless of whether it is in desiccated or liquid form. Desiccation, however, enhances the maintenance of high viability.

The degree of immunity produced with a viable strain 19 vaccine is relative in that there is considerable variation in the degree of immunity produced in approximately 30 per cent of the calves vaccinated. Both controlled research and field experiments show that strain 19 vaccine will provide serviceable protection in approximate-

ly 65 to 75 per cent of the animals against average exposure to infection; whereas, the remaining percentage of animals will have a lesser degree of immunity to the same exposure. The degree of immunity induced in any individual does not decrease with an increase in age of the animal. Consequently, there is no indication of need for revaccination. It has been the tendency of strain 19 vaccine to materially reduce animal infection, but it has been less effective in reducing herd infection. The highest degree of efficiency that can be accomplished by vaccination is through vaccination of a very high per cent of the breeding females and removal of reactors which result in decreasing the degree of susceptibility and the degree of exposure to infection.

Strain 19 vaccination will not cure infected animals and will not independently eradicate the disease from a herd. Therefore, if we intend to eradicate bovine brucellosis in this country, it will be necessary to use all effective tools available in addition to strain 19 vaccine.

## *Salmonella dublin* from Cows Contaminates Market Milk

**Robert J. Schroeder and Mary B. Dale, *Los Angeles, California***

Highly suggestive circumstantial evidence indicates that diarrhea in man due to *Salmonella dublin* resulted from contamination of certified raw milk.

Forty-seven cases, 11 of which were laboratory confirmed, occurred between Oct. 29 and Nov. 4, 1958.

Pasteurization of milk from the dairy was ordered by the health officer, pending investigation.

Subsequent sampling of the milk revealed no *S. dublin*. However, fecal samples taken from 398 cows of the dairy revealed *S. dublin* in 3 cows. Two of these were proved to be active carriers. None were clinically ill nor was there any history of disease in the herd.

It is considered likely that a temporary breakdown in hygienic procedure resulted in contamination of the milk by feces from 1 or more of the shedder animals. This contamination possibly occurred in the milk which was bottled and distributed on Oct. 28, 1958, when an unusually high coliform count was recorded.

All animals shedding *S. dublin* were removed. The remainder of the herd passed 3 consecutive negative fecal examinations conducted at 2-week intervals and were then considered not infected.

The Medical Milk Commission allowed the dairy to resume distribution of certified raw milk after it had been cleaned and disinfected under official supervision. As an added precaution, this commission now requires that all cows must have a fecal examination before they are allowed to enter the milking herd from dry lot.

At the time of this report, no further cases have been recorded either in man or animal.

## The CMT Program in Shasta County

**Kenneth G. McKay, Francis F. Smith, Daniel O. Noorlander, David M. Gray, *Davis, California***

Shasta County initiated a California Mastitis Test (CMT) program in 14 DHIA herds comprised of approximately 1,500 cows. At the conclusion of the year, there was an over-all gain of 2.5 lb. butterfat per cow per month. Those dairymen who were willing and able to follow the program in the most detail gained considerably more than the average net gain per cow per month.

One cooperator gained 1.5 hours milking time at each milking by correcting maladjusted and malfunctioning milking machine equipment. Another cooperator, after making recommended changes in milking equipment and milking practices, gained $8,500 over the previous year's return.

It is my opinion that veterinarians and farm advisors should encourage dairymen to run a monthly CMT on all lactating cows

and prevail upon dairymen to keep individual monthly records. At the end of 3 months, they should have a fairly accurate record of the cows that are consistently positive and those that are consistently negative.

I would then recommend that milk samples from 10 per cent of the consistently positive animals be submitted to a veterinarian or diagnostic laboratory for bacterial identification. Further, sensitivity tests should then be run to determine the most efficacious antibiotic or drug or combination thereof for use in the herd—when cows are in a dry state.

The 14 dairymen cooperating in this project were nearly unanimous in condemning high vacuum. Those who made the greatest progress attribute much of their improvement to lowering the vacuum.

Correcting mechanical problems greatly reduced, and in many cases almost eliminated, the need for udder treatments during lactation. It was found that cows with CMT reactions of "2" and "3" often harbor mastitis organisms in a quiescent state.

All dairymen in this study adopted a dry cow treatment program. In most herds, only the "2" and "3" reacting cows were treated. Some dairymen treated all quarters; others checked each quarter with the CMT paddle and reagent and treated only the infected quarters. In most cases, the dry cows were observed for any udder distentions during the first week or two after treatment. If any swelling was observed, cows were retreated.

## Tuberculosis Reaccreditation and Eradication in a Western Range Area

J. W. Safford, *Helena, Montana*

How much reaccreditation does it take to indicate that tuberculosis has been eradicated? How can we justify the expense of repeatedly testing negative cattle merely to re-establish a modified accredited area?

To answer these questions, it will be necessary to develop a method to pinpoint sources of bovine tuberculosis and thereby avoid costs of unnecessary reaccreditation tests in the range and semirange areas. We must stop thinking in modified-accredited terms and start thinking in tuberculosis-free area terms.

It is recommended that tuberculosis-free areas be established and maintained in the range and semirange areas based on the absence of tuberculosis lesions in slaughtered cattle. All tuberculosis lesion cases should be traced to the herd of origin. The herd of origin should be retested until absolutely all infection is removed. If lesions continually appear in cattle from an area, the entire area should be placed under federal and state quarantine, removed from the tuberculosis-free status until all cattle in the area have been tested and retested and the area re-established as completely free from tuberculosis and found free from tuberculosis prior to movement.

We believe such an approach is now in order. A vigorous testing program in herds and areas where indicated by post-mortem reports will (1) avoid unnecessary waste of manpower and funds in counties where bovine tuberculosis is nonexistent, as now required by reaccreditation tests; (2) direct tuberculosis tests to herds and areas where needed; and (3) assure that range and semirange areas will remain free from tuberculosis.

## Tuberculin Sensitivity in Wisconsin Cattle

D. T. Berman and C. A. Tervola, *Madison, Wisconsin*

In Wisconsin, there has been a marked increase in number of herds containing reactors.

Several hypotheses have been considered in accounting for this rise in the incidence of tuberculin sensitivity. One theory is that the test results are an index of a real increase in the incidence of bovine tuberculosis. This appeared to be unlikely for several reasons. First, the areas involved have been tested extensively and negatively over a period of many years with a regular de-

cline in incidence of reactors prior to 1957. Second, over 90 per cent of Wisconsin cattle killed are subjected to federal inspection, and the incidence of tuberculous lesions found on regular kill has declined during this period of time. Third, the average incidence of less than 2 reactors per herd is not typical of spreading infection. Fourth, the high incidence of NVL reactors is not typical of spreading infection.

An alternative hypothesis is that a major share of the reactions are the result of sensitization of mycobacteria other than *Mycobacterium bovis*.

Data obtained in a field study involving 657 herds show that the relative potency of a given lot of tuberculin, the quantity used, or both, could have considerable effect on the numbers of reactors detected in an area in which standard criteria of classification of reactions are employed. Discrimination tests with avian tuberculin and johnin on 171 animals, which reacted to the official caudal test, showed that only 43 per cent had reactions to mammalian tuberculin which exceeded in size by 1 mm. or more reactions to nonmammalian tuberculin. Only 1 of 284 reactors in this survey had a lesion in the thoracic cavity.

Questions that need answers in respect to the tuberculosis eradication program are: (1) In view of the widespread occurrence of low level sensitivity to tuberculin, are the potency and quantity of tuberculin used excessive for populations with a low incidence of infection? (2) In view of the relatively low degree of specificity of the responses to mammalian tuberculin, should a discrimination test be employed? (3) What is the source of the apparently hetero-specific sensitization?

## Lamb Growth Responds to Selenium

Sodium selenite fed to pregnant ewes at the rate of 0.1 p.p.m. of selenium will protect their lambs against muscular dystrophy. When given to young lambs themselves, selenium also protects against naturally occurring muscular dystrophy.

Selenium was given to experimental lambs in the form of sodium selenate at the rate of 1.0 mg. every 7 to 10 days. Differences in weight gains were highly significant, ranging from 3.0 to 10.7 lb. 2 to 3 weeks after treatment.

There is little doubt that the lambs require traces of selenium for normal metabolism, that vitamin E and selenium are interrelated in their metabolic functions, and that vitamin E cannot completely replace the need for selenium. Growth response in lambs may, therefore, be taken as an indication of selenium deficiency. This deficiency is manifest either as a slowed growth or as a predisposition for muscular dystrophy.

Lambs showing the strongest reactions were those in which losses from muscular dystrophy had occurred prior to the tests. —*Nature, 184, (1959): 251.*

## Penicillin Suppresses Milk Preservative

Bactericidal effect of hydrogen peroxide as a routine means of raw milk preservation was considerably lowered due to presence of penicillin in milk. Apparently, this is not a simple case of chemical interference between the 2 drugs, but a more complex interaction connected with the bacterial cell itself.

When added artificially to normal raw milk, different concentrations of penicillin G caused interference, while in other cases they did not. This finding suggests that the phenomenon depends chiefly upon the quality of unhomogenous milk microflora rather than on quantity.—*Nature, 184, (1959): 292.*

*Is Feed Medication*

# the Answer to Coccidiosis

*in Poultry?*

R. L. KILGORE, D.V.M.

TODAY WE are offered the choice of several drugs which are claimed to have coccidiostatic value. We are bombarded from all sides with advertising and promotion relating the advantages of each of these drugs. On the other hand, we hear reports in relation to these coccidiostats of "breakthroughs,"* resistant species and strains, interference with immunity, aggravation of the anemia-hemorrhagic syndrome, poor feed conversion, adverse effects on reproduction, and other problems. As a result, many poultrymen and veterinarians are confused and are asking if feed medication is the answer to coccidiosis prevention.

If feed medication is not the answer, can alternative measures be prescribed? The first suggestion might be for the poultryman to return to the strict sanitation and management practices that were depended upon before the advent of modern coccidiostats. Certainly these practices should not be overlooked because they are just as important, if not more so, today as they were 10 or 15 years ago. However, under the conditions of mass production which prevail in the poultry industry today, it is doubtful if sanitation and management procedures alone can be depended upon to control coccidiosis.

### Vaccination or Planned Exposure

Another measure that might be suggested would be to employ a "vaccine" to immunize birds against various coccidia to which they may be exposed. Vaccination, or planned exposure, has become popular and, in theory, would appear to offer a logical approach to the coccidiosis problem. However, the following problems must be considered:

1) Considering the peculiarities of coccidia, maintaining virulence of a vaccine product would be difficult.

2) Experience with other types of biological products indicates that improper handling and administration of the vaccine is possible.

3) The planned exposure program may not be compatible with practical disease control measures involving use of broad-spectrum antibiotics, sulfonamides, and nitrofurans. The need for employing these drugs, which have strong anticoccidial activity, often arises during the time that the chickens are developing immunity.

4) The present broiler-type vaccine does not contain oocysts of *Eimeria necatrix* and *Eimeria maxima*. *Eimeria necatrix* is one of the major species involved in coccidiosis epizootics in broiler flocks; *E. maxima* infection has been diagnosed more frequently in broilers during the past year. Therefore, this vaccine would afford only partial immunity.

5) Since a current recommendation is to follow the coccidiosis vaccine with feed medication for 5 weeks or longer, there appears to be no particular advantage of planned exposure over continuous preventive medication for broilers.

The use of planned exposure or immunization would seem to have a more practical application in replacement flocks than in broilers, but only time and extended usage will give the answer concerning the effectiveness and acceptability of this procedure.

Other alternatives would be to use intermittent medication or to treat epornitics only after they occur. These methods have been found to be unreliable and expensive.

### Feed Medication

Regardless of other available methods for control of coccidiosis, continuous feed

---

Based on a presentation given at the 96th Annual Convention of the AVMA in Kansas City, Mo., Aug. 23-27, 1959.

Dr. Kilgore is manager of clinical research at the Ralston Purina Co., St. Louis, Mo.

*"Break-through" is a term commonly used in the poultry field to denote the occurrence of an epornitic in a flock receiving preventive medication.

medication remains as the most desirable program for broilers. This method is attractive to the efficiency-minded poultryman because it is convenient and economical. The first widespread use of coccidiostats began about ten years ago with the sulfonamides. Sulfaquinoxaline was one of the most popular preventives. Since that time, many other drugs have been made available for coccidiosis prevention, and there are several experimental compounds that show promise.

A good coccidiostat must possess three major qualifications; it must be effective, safe, and economical. There are, of course, other factors to be considered. In the realm of feed medication, then, the problem becomes one of determining which compound is best qualified for the job.

*Effectiveness.*—Regardless of how effective a drug may be, however, reports of "break-throughs" will come from the field. The investigator must then determine if it is a false alarm or if it is actually a lack of effectiveness. False alarms are common and usually arise from incorrect diagnoses. The anemia-hemorrhagic syndrome, which is so common in chickens at the present time, may present lesions resembling coccidiosis so closely that one should not venture a diagnosis without laboratory aid. Cecal cores, commonly found associated with pullorum and blackhead in chicks, may be confused with *E. tenella* infection. Even with the aid of a microscope, the less experienced diagnostician may be too quick to conclude that coccidiosis is the problem. The mere presence of oocysts, without clinical manifestations such as lesions and flock morbidity or mortality, does not constitute sufficient evidence for a diagnosis of coccidiosis. In investigating "breakthroughs", therefore, one must make sure that all aspects are considered.

Not all complaints are false alarms. There are cases where the drug fails to afford protection. The coccidiostat may have a low order of activity against coccidiosis in general; it may be highly effective against one or two species but inactive against others; or it may be selective in activity against various strains. Unfortunately, methods for determination of efficacy and opinions on the degree of activity required of a good coccidiostat vary greatly. These have been, and will continue to be, major points of controversy until research groups agree upon standard procedures for evaluation. Coccidiostats that are commercially available at the present time possess activity ranging from low to high. Certainly a feed manufacturer, who spends thousands or millions of dollars a year on coccidiostatic materials, should have a coccidiosis research program in order to protect himself as well as his customers. This program, in order to be complete, must include laboratory studies, closely controlled field studies under practical conditions, and wide-scale field observations.

Closely controlled laboratory tests are valuable in that they provide a large amount of information in a relatively short time. It has been our experience that a product that does not stand up under moderate to severe exposure in the laboratory usually will not be effective under extended field use. On the other hand, excellent results in the laboratory do not always mean that the drug will be highly effective under practical conditions. Without laboratory tests, however, it would not be possible to compare the relative effectiveness of drugs against various species and strains of coccidia. Routine laboratory tests should include not only studies on the effectiveness against *E. tenella* and *E. necatrix*, but also against *E. acervulina* and *E. maxima*.

Some research groups also claim that *Eimeria brunetti*, *Eimeria hagani*, and *Eimeria mitis* should be routinely considered.

The coded data presented herewith illustrate the range of activity of commercial coccidiostats in relation to various species and strains of coccidia. In these particular laboratory studies, crossbred (Arbor Acre x Vantress) chicks were confined to wire-floored battery pens and started on medicated broiler meal for 24 to 72 hours before exposed to coccidiosis. Exposure in each case was through the feed. The total dose of sporulated oocysts for each pen was mixed into the amount of feed to be consumed in less than 24 hours.

Results show that four coccidiostats under study afforded good protection against a rather severe exposure to strain No. 1 of *E. tenella* (table 1). Coccidiostats A and B were superior to the other two drugs.

When the same compounds were subjected to a test of effectiveness against *E. necatrix* (table 2), it was found that coccidiostat A remained highly effective while coccidiostat B was less effective. In view of

**TABLE 1—Protective Ability of 4 Commercial Coccidiostats Against Eimeria tenella (Strain No. 1) in 3-Week-Old Chicks Infected With 800,000 Sporulated Oocysts Per Bird**

| | Coccidiosis mortality No. dead/Total | 13-days' gain (% of NIC*) |
|---|---|---|
| Noninfected control | 0/28 | 100 |
| Infected control | 14/34 | 53 |
| Coccidiostat A | 0/68 | 85 |
| B | 0/68 | 93 |
| C | 1/68 | 79 |
| D | 2/68 | 79 |

*NIC=Noninfected control.

the severe exposure, coccidiostat C may be considered to have good protective value against *E. necatrix*. Coccidiostat D apparently has a low order of activity against *E. necatrix*.

In routine laboratory tests, *E. maxima* does not produce a high mortality. However, in the experiment shown here (table 3), there was adequate exposure to cause significant mortality and morbidity in the infected control. All the coccidiostats showed some activity against this strain, but coccidiostat B was superior to the other drugs.

When exposed to less than 1 million sporulated oocysts of *E. acervulina*, 2-week-old chicks usually do not suffer mortality in laboratory tests. A dose of 750,000 oocysts per bird (table 4) did produce some morbidity in the infected control group. Very little protection from morbidity was afforded by medication except from coccidiostat B.

There is a wide variation in sensitivity of strains or isolates to coccidiostats in routine laboratory screening tests. A comparison of activity of 3 commercial drugs is shown (table 5). Isolate 1 is sensitive to all three compounds. Isolate 7 is apparently resistant to coccidiostat B but not to the other 2 drugs. Isolate 9 is resistant to coccidiostat G.

Resistant coccidial strains appear which defy the best of coccidiostats. Whether these resistant strains exist undetected until a product appears on the market or whether they develop resistance after repeated exposure to the drug is not yet clear. In either case, the most extensive research programs cannot be expected to uncover all of these strains. This does not imply that research groups should not study as many strains or isolates of the various coccidia species as possible.

Another factor to be considered is the effect a coccidiostat has on the development of immunity. Immunity to coccidiosis is of small concern to the broiler grower since his primary objective is to produce marketable broilers just as rapidly and economically as possible. The egg producer or breeder, on the other hand, is definitely interested in immunity. He does not have, at the present time, a highly effective and safe coccidiostat that can be fed economically throughout the laying period. Therefore, replacement flock chickens should have a solid immunity by the time they come into production.

**TABLE 2—Protective Ability of 4 Commercial Coccidiostats Against Eimeria Necatrix (Strain No. 2) in 3-Week-Old Chicks Infected with 2 Million Sporulated Oocysts Per Bird**

| | Coccidiosis mortality No. dead/Total | 13-days' gain (% of NIC*) |
|---|---|---|
| Noninfected control | 0/15 | 100 |
| Infected control | 22/36 | 15 |
| Coccidiostat A | 0/36 | 93 |
| B | 0/36 | 77 |
| C | 4/36 | 62 |
| D | 13/36 | 26 |

*NIC=Noninfected control.

**TABLE 3—Protective Ability of 4 Commercial Coccidiostats Against Eimeria maxima (Strain No. 1) in 2-Week-Old Chicks Infected with 150,000 Sporulated Oocysts Per Bird**

| | Coccidiosis mortality No. dead/Total | 13-days' gain (% of NIC*) |
|---|---|---|
| Noninfected control | 0/26 | 100 |
| Infected control | 4/36 | 38 |
| Coccidiostat A | 0/36 | 56 |
| B | 0/36 | 90 |
| C | 0/36 | 57 |
| D | 0/36 | 69 |

*NIC=Noninfected control.

**TABLE 4—Protective Ability of 4 Commercial Coccidiostats Against Eimeria acervulina (Strain No. 3) in 2-Week-Old Chicks Infected with 750,000 Sporulated Oocysts Per Bird**

| | Coccidiosis mortality No. dead/Total | 8-days' gain (% of NIC*) |
|---|---|---|
| Noninfected control | 0/30 | 100 |
| Infected control | 0/30 | 66 |
| Coccidiostat A | 0/30 | 73 |
| B | 0/30 | 91 |
| C | 0/30 | 73 |
| D | 0/30 | 69 |

*NIC=Noninfected control.

**TABLE 5—Differences in Sensitivity of Eimeria tenella Strains to 3 Commercial Coccidiostats in 2-Week-Old Chicks**

| Isolate no. | 1 | | 9 | | 7 | |
|---|---|---|---|---|---|---|
| Oocysts/Chick | 800,000 | | 500,000 | | 2 million | |
| | Mort.* | Gain** | Mort. | Gain | Mort. | Gain |
| Noninf. control | 0/13 | 100 | 0/30 | 100 | 0/30 | 100 |
| Inf. control | 8/34 | 67 | 11/30 | 27 | 20/30 | 25 |
| Coccidiostat B | 0/34 | 95 | 0/30 | 60 | 17/30 | 25 |
| C | 0/34 | 90 | 3/30 | 45 | 0/30 | 87 |
| G | 0/34 | 99 | 10/30 | 43 | 0/30 | 94 |

*=Mortality from coccidiosis—number dead/total .**=Weight gains for 13 days—percentage of noninfected control.

*Safety of Coccidiostats.*—In addition to activity and effect on immunity, safety of a drug to animals and to the ultimate consumer must be established. The Food and Drug Administration has set forth high standards of safety which must be met by any new drug to be administered through the feed. The feed manufacturer, therefore, need not be greatly concerned about dangers of acute toxicity. He must, however, study a new candidate for any slight effect it may have on results from his feeding programs. For example, the broiler grower has a critical eye on gains, feed conversion, pigmentation, and feathering.

At least two of the popular coccidiostats used today will cause a slight depression in growth. On the surface, this small effect may seem insignificant, but to the large producer facing competitive broiler prices, this may well mean the difference between profit and loss. Some coccidiostats produce better feathering and deeper skin color than others; these factors are important to the processor and, therefore, affect the marketability of the birds.

If a drug has adverse effects on reproduction, it is not only of great concern to the producer of commercial eggs and breeding stock but also to the feed dealer and the feed manufacturer. Even though the drug is recommended only for nonlaying birds, there is always the danger of contaminating rations of laying birds. This contamination may result in lowered egg production, poor hatchability, and poor egg quality. Regardless of how much the contamination problem is minimized, it does exist. Not only has it occurred in the feed mill, but also in the bulk bins and bulk trucks of feed dealers and producers.

Another point to be considered along with safety, is the effect the coccidiostat will have on the course of certain diseases such as the anemia-hemorrhagic syndrome. Certain of the sulfonamides will aggravate this condition. On the other hand, feed medicaments are too often the scapegoat for this or any problem for which there is no answer.

Because there are other drugs administered through the feed to poultry, the compatibility status of a new coccidiostat must be known. If a flock is receiving a coccidiostat which is not approved for use with common medicaments, many problems can arise. It may become necessary to remove the coccidiostat in order to administer treatment for an acute problem. This leads to confusion and may leave the flock wide open for an epornitic of coccidiosis.

**Contamination of poultry rations does exist . . . it results in lowered egg production, poor hatchability, and poor egg quality.**

From the feed manufacturer's standpoint, many other factors must be considered. For example, the physical properties of the drug should be such that it mixes easily into a ration and remains stable under the most adverse manufacturing conditions. The drug should present no serious hazards to mill employees. It should not be dangerous to other animals in case of cross-contamination. There should be a rapid and accurate analytical procedure for determination of the amount of drug in the ration.

## Discussion

Based upon past history, the future of feed medication for coccidiosis prevention will depend to a great extent on a continuous supply of new drugs. Even though there are several good coccidiostats available today, all have their shortcomings.

The success of feed medication also depends heavily upon good sanitation and management practices. With the growth of coccidiostats, there has been an increasing

false sense of security on the part of the poultryman. No drug should be viewed as a panacea. Since the established levels of most drugs are for average conditions, "break-throughs" are inevitable when the poultryman allows his birds to receive an overwhelming exposure of coccidia. There is a tremendous job ahead for all interested in better poultry health in reviving the basic principles of sanitation.

#### Summary and Conclusions

At the present time, considerable confusion exists concerning use of coccidiostats in feed. Alternative methods of control such as strict sanitation and management practices, immunization, treatment on an intermittent basis, and treatment after epizootics occur are not, in themselves, satisfactory substitutes. In making a choice of a coccidiostat, the feed manufacturer must study thoroughly the effectiveness of the drug against all pathogenic species as well as various strains of coccidia. The drug must fit into the manufacturer's feeding programs on the basis of economics and freedom from adverse effects on growth, conversion, reproduction, and other factors.

The future of feed medication depends upon the discovery of new coccidiostats and improvement in sanitation and management practices in poultry operations. Feed medication can be the answer to control of coccidiosis if the many challenging problems are recognized and met.

---

## Chronology Relating to Use of Diethylstilbestrol in Poultry and Meat Animals

In 1938, the Federal Food, Drug, and Cosmetic Act replaced the Federal Food and Drugs Act of 1906. The new law contained for the first time a requirement placing on drug manufacturers the burden of proof to show that any new drug is safe before it is marketed. Under this requirement, a manufacturer of a new drug submits a "new drug application" containing, among other things, reports of animal tests, clinical studies, or other research to show that the drug will be safe under the proposed directions and conditions of use. If the evidence is convincing, the application is allowed to "become effective" and the drug may be marketed. If the evidence of safety is not convincing, the application is denied, and marketing of the drug in interstate commerce is a violation of federal law.

This section of the law also provides, however, that once a new drug application has been made effective, the burden of proof shifts to the government to show that the drug is unsafe in an action to revoke the application.

In 1941, acting under the New Drug Section, the Food and Drug Administration permitted 11 firms to begin marketing diethylstilbestrol for clinical use. The drug is now widely used in medicine, subject, of course, to strict supervision by a physician.

In May, 1945, the Food and Drug Administration received the first applications for the use of diethylstilbestrol pellets in poultry. Directions for use called for implanting the pellet under the skin at the base of the skull of poultry, so that any unabsorbed pellet residue would be removed with the head at the time of slaughter.

This application was permitted to become effective on Jan. 30, 1947, after almost 2 years of study. It was known at that time that diethylstilbestrol had been shown to produce cancer in test animals by oral administration. However, at that time it was believed that no significant residues of the drug would remain in the edible tissues of the treated birds.

Several additional applications covering

similar products and uses have been made effective. It is estimated that about 1 per cent of the poultry which now goes to the market has been treated with diethylstilbestrol.

In 1948, the Food and Drug Administration published in the *Federal Register* a statement of policy advising manufacturers of veterinary drugs that all new drug applications for veterinary products intended to effect physiologic changes in farm animals (*i.e.*, to promote fattening, increase milk or egg production, etc.) would have to include evidence that no residue would remain in the human food products derived from treated animals.

In 1950-1951, a Select Committee of the House of Representatives under the chairmanship of the Hon. James J. Delaney conducted an investigation of chemicals being used in foods. During this investigation, a representative of one of the manufacturers of diethylstilbestrol for implantation testified that evidence had been developed showing that minute amounts of diethylstilbestrol remain in the liver of treated birds. The residue was thought to be of the order of 20 to 40 parts per billion. Although the interpretation of the data was questionable, the amount of residue was considered for all practical purposes the same as zero. These data were submitted to the Department as assurance that no residue would remain in the edible parts of the bird.

There was conflicting testimony before the Delaney Committee regarding the safety to the consumer of diethylstilbestrol-treated poultry.

In 1954, an application was permitted to become effective for the marketing of diethylstilbestrol for addition to the feed of beef cattle. Evidence submitted with the application showed no detectable residues in the meat of the animals when the treated feed was withdrawn 48 hours prior to slaughter as called for in the directions.

Since then, many similar applications have been made effective. All are based on absence of detectable residues in meat from the treated animals.

It is estimated that 80 to 85 per cent of beef cattle are now given feed containing diethylstilbestrol. Commercial feeding and slaughtering practices are such that there is every reason to believe that directions for withdrawal of the medicated feeds at least 48 hours before slaughter are followed, and that meat is, therefore, free of detectable residues of diethylstilbestrol.

In December, 1955, FDA permitted the marketing of diethylstilbestrol pellets for implantation in the ear of beef cattle. Evidence submitted showed that this use resulted in no detectable residues in meat of the treated animals. Directions for use, as specified in the application, state that the ear is not to be used for food for man or animal.

By 1957, a reliable method of assay for diethylstilbestrol in animal tissues had been developed, and the Food and Drug Administration applied this method to learn whether the supposed zero levels were actually being achieved in cooked beef and poultry. This experience showed that there was no residue in beef, but it confirmed the presence of 20 to 30 parts per billion of residues in the liver, and 35 to 100 parts per billion in the skin fat of treated chickens.

When this evidence had been accumulated in 1957, the Commissioner of Food and Drugs posed the problem to his scientific advisors whether it could be shown scientifically that these minute residue levels were unsafe. He concluded on the basis of evidence available at that time that the new drug applications could not be revoked.

In 1957, The Council on Foods and Nutrition of the American Medical Association authorized publication of a report, "Estrogen Residues in Meat—Public Health Aspects," prepared by Dr. George M. Briggs of the Nutrition and Endocrinology Division of the National Institutes of Health, and co-sponsored by the Nutrition Foundation, Inc. (*J. Am. M. A.*, 164, (1957): 1473-1476). This report concluded that administration of compounds with estrogenic activity to beef cattle and poultry to improve weight gains and feed efficiency presents no hazard to man.

In 1957, FDA permitted the marketing of diethylstilbestrol for addition to the feed of sheep, again under conditions which leave no residue in the meat. In October, 1959, FDA permitted the marketing of diethylstilbestrol pellets for implantation in the ears of sheep. No residue remains in the mutton; directions call for discarding the ear.

In September, 1958, Congress enacted the Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act.

This amendment required premarketing safety clearance for food additives along the lines of the requirements established for new drugs by the 1938 Act. It places on the manufacturer the burden of proof of safety.

Two special sections, however, are pertinent in this connection:

1) The amendment provides, among other things that "no regulation permitting the use of a food additive may be issued if a fair evaluation of the data before the Secretary fails to establish that the proposed use of the food additive, under the conditions of use to be specified in the regulation, will be safe: Provided, that no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal,* or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal."

2) The law exempts from the definition of a food additive, "any substance used in accordance with a sanction or approval granted prior to the enactment of this paragraph pursuant to this Act."

Thus, under this latter provision a product previously permitted under a new drug application is not a food additive, and in any revocation of a new drug application the burden of proof shifts to the government, which must then show the product unsafe.

In May, 1959, FDA published in the *Federal Register* a statement of policy in which it interpreted the first of the sections quoted above as prohibiting it from making effective any further applications for the addition to animal feed or any use which leaves residues in human food of any drugs which produce cancer in man or animal when ingested.

The statement of policy stated further that all prior sanctions for such substances would be reviewed, and that if it were concluded that revocation of new drug applications would be required in the proper administration of the Federal Food, Drug, and Cosmetic Act, appropriate action would be taken.—*U.S. Department of Health, Education, and Welfare, FDA, Washington, D.C.*

*This clause is frequently referred to as the "Delaney clause" of the Food Additive Amendment.

## Removal of Radioactive Strontium and Cesium from Milk

There is considerable concern about the occurrence of radioactive isotopes in milk. As is known, isotopes of calcium and strontium are easily removed from blood, without causing a change in the net calcium concentration of the blood. With this idea in mind, it was decided to remove strontium from milk by means of a cation exchange resin in a calcium form.

Experiments were conducted on commercial milk to which strontium$^{89}$ was added, and on guinea pig milk containing strontium$^{89}$ diluted with cow's milk. The resin was treated with calcium, potassium and sodium chloride. There was no change in the calcium, potassium, and sodium content of the milk, while 86 per cent of the strontium was eliminated and milk flavor remained unchanged.

In the test with milk from guinea pigs, the same percentage of strontium was eliminated. In another test, cesium-$^{137}$ was added to the milk. It was removed by the same resin which removed strontium.

Thus, strontium and cesium can be eliminated without altering the milk. It is not known if this can be done on a large-scale basis.—*Nature, 184, (1959): 374.*

# Canine Histoplasmosis

## *with Intestinal Involvements*

Harry E. RHOADES, M.S.
Lloyd C. HELPER, D.V.M.
Thomas E. FRITZ, D.V.M.

A 2-YEAR-OLD Chihuahua weighing approximately 8 lb. was treated at the University of Illinois small animal clinic on Dec. 22, 1958, for severe diarrhea. The owner stated that diarrhea had occurred 6 months previously with several recurrences since then. Medication with antibiotics and intestinal protectants had controlled the diarrhea until a short time before admission to the clinic.

At the time of examination, the body temperature was 103.5 F. and there was slight tonsillitis, moderate abdominal tenderness, and moderate roughness of the coat. The histoplasmin skin test was negative.

### Clinical Pathologic Findings

Fecal examination using the sodium nitrate flotation technique[2] was negative for internal parasites. The total leukocyte count was 16,800/cmm. of blood and the differential count revealed 79 per cent neutrophils consisting of 2 per cent stab cells, 77 per cent segmented neutrophils, and 21 per cent lymphocytes. The hemoglobin was 8.5 Gm./100 ml. of blood.

### Mycologic Findings

Rectal swabs were streaked on Sabouraud-dextrose agar slants containing 200 units of potassium penicillin G, 1 mg. of dihydrostreptomycin, and 0.5 mg. of cyclohexamide* per milliliter. After 27 days of incubation at room temperature, characteristic tuberculate chlamydospores of *Histoplasma capsulatum* were identified.

The dog was euthanatized 5 days later. At necropsy, blood, liver, spleen, lungs, mesenteric lymph nodes, bronchial lymph nodes, and segments of the small and large intestines were cultured on Sabouraud-dextrose agar slants containing penicillin, dihydrostreptomycin and cyclohexamide. *Histoplasma capsulatum* was isolated from the blood, liver, spleen, lungs, mesenteric lymph nodes, and bronchial lymph nodes but not from the segments of small and large intestines.

### Gross Pathologic Changes

Hemorrhago-catarrhal enteritis with focal ulceration extended throughout the length of the intestine, including the colon and rectum. The ulcers varied from 2 to 5 mm. in diameter, were irregular in shape, and slightly depressed. The intestinal wall was irregularly thickened and the mucosa congested and hemorrhagic, especially in the areas of ulceration.

The liver contained numerous diffusely scattered, grayish white foci approximately 1 mm. in diameter. The lungs were moderately congested and more firm than normal. Numerous, white nodules similar to those in the liver were scattered throughout all lobes. The bronchial and mediastinal lymph nodes were normal in size, but showed increased density on palpation and incision. The mesenteric and ileocecal lymph nodes were enlarged to three or four times their normal size. They had increased density and granular consistency. Differentiation between the cortical and medullary portions of these nodes was impossible as the cut surface was gray. The kidneys and spleen were not grossly altered.

From the Department of Veterinary Pathology and Hygiene, and the Department of Veterinary Clinical Medicine, College of Veterinary Medicine, University of Illinois, Urbana.

*Acti-dione, Upjohn Co., Kalamazoo, Mich.

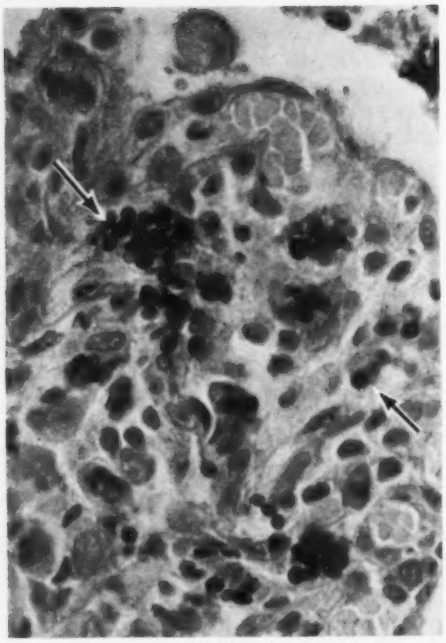


Fig. 1—Yeast phase of Histoplasma capsulatum in mucosa of jejunum. Gomori's methenamine silver nitrate. x 600.

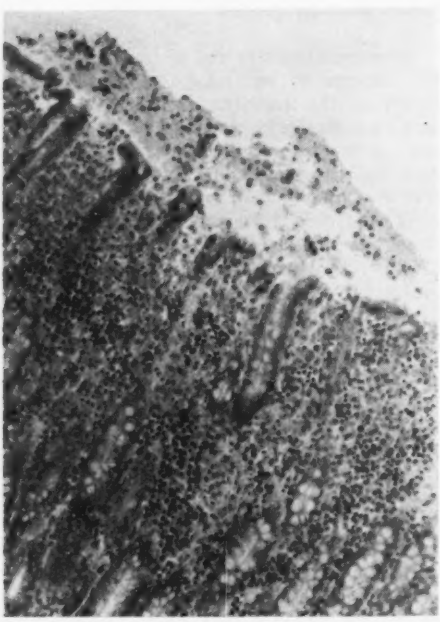


Fig. 2—Mucosa of jejunum of a dog showing chronic inflammation. H & E stain; x 195.

### Histopathologic Changes

At necropsy, tissues were fixed in Zenker's solution and paraffin sections were stained with Harris' hematoxylin and eosin stain, periodic acid-Schiff stain, and Gomori's methenamine silver nitrate stain.[8]

The yeast phase of *H. capsulatum* was demonstrated in the tonsils, bronchial lymph nodes, liver, spleen, lungs, and the walls of the jejunum and colon (fig. 1). Pancreas and kidney were the only tissues examined in which Histoplasma was not found. The organisms were present in large numbers in all tissues except the lungs, where few could be found. They were in the cytoplasm of phagocytic mononuclear cells and also apparently free in the intercellular spaces.

The cellular reaction was granulomatous in nature and consisted essentially of hyperplasia of the reticuloendothelial cells and infiltration of mononuclear cells. Lymphocytes and plasma cells were present, but in fewer number than the larger mononuclear cells. Fibroblastic proliferation and collagen deposition were mild to moderate in most tissues. Focal coagulation necrosis could be demonstrated in most sections but was prominent only in the lymph nodes. Although Histoplasma was not found in the kidney, there were a few small focal aggregations of mononuclear cells in the cortical portion of the section examined.

The inflammatory reactions in the walls of the jejunum and colon were severe (fig. 2). There was involvement of the submucosa, muscularis, and subserosa as well as the mucosa. Focal necrosis and desquamation of the mucosal epithelium had occurred. The entire wall was congested and hemorrhage into the lumen was evident in the areas of epithelial loss. Collagen deposition was moderate to marked in the mucosa. Histoplasma was present in all portions of the gut wall, including the subjacent area of the serosa.

### Discussion

The portal of entry and the site of primary infection of *H. capsulatum*, both in man and animals, have been debated. Primary histoplasmosis in the lungs in man and the dog has been reported as evidence that the respiratory system is the portal of entry.[6,12] Intestinal lesions and almost con-

stant involvement of the mesenteric lymph nodes have been given as strong evidence in favor of the gastrointestinal tract as the portal of entry.[15,16,21]

Whether the portal of entry is the respiratory system or the gastrointestinal tract, enteritis appears to be an important feature of histoplasmosis in the dog.[1,3,4,7,9-11]

The examination of human fecal specimens for the presence of *H. capsulatum* has been recommended.[5] Clinical diagnosis of histoplasmosis in the case reported here was based on the culture of material from a rectal swab and the isolation of *H. capsulatum*. Since enteritis is an important feature of canine histoplsamosis, the culture of feces from dogs with persistent diarrhea is recommended.


**Summary**

*Histoplasma capsulatum* was isolated from fecal material from a dog with a history of persistent diarrhea. Demonstration of *Histoplasma capsulatum* in the liver, spleen, lungs, mesenteric lymph nodes, and bronchial lymph nodes by culture and stained tissue sections indicated that this was a case if disseminated histoplasmosis. The cellular reaction was granulomatous in nature. There was severe hemorrhago-catarrhal enteritis with focal ulceration throughout the intestine. The mesenteric and ileocecal lymph nodes were enlarged.

The culture of feces from dogs with persistent diarrhea is recommended.


**References**


[1]Birge, R. F., and Riser, W. H.: Canine Histoplasmosis. Report of Two Cases. North Am. Vet., 26, (1945):281-287.

[2]Coffin, D. L.: Manual of Veterinary Clinical Pathology. Comstock Publishing Company, Inc., Ithaca, N. Y., 1953.

[3]Cole, C. R., Chamberlain, D. M., and Prior, J. A.: Incidence, Symptomatology and Diagnosis of Canine Histoplasmosis. Proc. Book, AVMA (1951):179-181.

[4]Cole, C. R., Farrell, R. L., Chamberlain, D. M., Prior, J. A., and Saslaw, S.: Animal Histoplasmosis. Proc. Conf. on Histoplasmosis, 1952. U. S. Pub. Health Serv. Pub., 465, (1956):274-276.

[5]Henderson, R. G., Pinkerton, H., and Moore, L. T.: *Histoplasma capsulatum* as a Cause of Chronic Ulcerative Enteritis. J.Am.M.A., 118, (1942):885-889.

[6]Hodgson, C. H., Weed, L. A., and Clagett, O. T.: Pulmonary Histoplasmosis: Summary of Data on Reported Cases and a Report of Two Patients Treated by Lobectomy. J.Am.M.A., 145, (1951):807-810.

[7]Howell, H. W., and Case, A. A.: The Incidence of Histoplasmosis in Missouri. Proc. Book, AVMA (1951):181-185.

[8]Manual of Histologic and Special Staining Technics, Armed Forces Institute of Pathology, Washington, D. C., 1957.

[9]Menges, R. W., McClellan, J. T., and Ausherman, R. J.: Canine Histoplasmosis and Blastomycosis in Lexington, Kentucky. J.A.V.M.A., 124, (1954): 202 207.

[10]Osebold, J. W.: *Histoplasma capsulatum* Infection in a Dog. North Am. Vet., 31, (1950):461-462.

[11]Robinson, V. B., and McVickar, D. L.: Pathology of Spontaneous Canine Histoplasmosis. A Study of Twenty-One Cases. Am. J. Vet. Res., 13, (1952):214-219.

[12]Schwarz, J., and Bingham, E. L.: The Pathogenesis of Canine Histoplasmosis. J.A.V.M.A., 128, (1956):611-613.


## Attenuated Strain of Canine Distemper Virus in Tissue Culture

Canine distemper virus was cultivated in dog tissue culture, and the 56th passage of virus was tested in ferrets. During a 25-day observation period, the ferrets did not show signs of disease. On day 25, all ferrets were challenged with freeze-dried ferret spleen containing distemperoid virus. After 7 days, controls, developed distemper. Of 4 animals inoculated with tissue culture virus, none showed signs of distemper.

Apparently, after 56 passages the attenuated virus loses its pathogenicity for ferrets, but it still retains antigenicity.—*Nature, 184, (1959): 822.*

# Pancreatic Atrophy

## *and Absorption Failure in a Boxer*

Carl H. CLARK, D.V.M., PH.D.

PANCREATIC atrophy in the dog has been reported frequently in the literature.[1-3, 5-10] Some of these reports indicate that treatment is successful, while others indicate that it is not. It seems logical to assume that, if only the ability of the pancreas to secrete enzymes is lost, then feeding either predigested food or enzymes would completely correct this. However, this is not always the case, and feeding predigested foods and pancreatic enzymes did not correct the pancreatic defect in the Boxer reported in this paper.

This 11-month-old female Boxer was referred to the small animal clinic of the Auburn University by a practitioner who had diagnosed the case as pancreatic atrophy and had treated it with pancreatic enzymes without success. The dog was emaciated, although its appetite was good.

Because enzyme therapy had failed, a diet consisting of predigested foods was given. The dog was placed on a mixture of glucose, amino acid hydrolysate, oleic acid, and a vitamin and mineral supplement. All these foods were in a form that could be absorbed directly without prior digestion. However, her condition did not improve, and she continued to lose weight.

### Digestion and Absorption of Nutrients

The ability of this dog to digest and absorb various nutrients was studied, using foods tagged with radioisotopes. Radioactive triolein, oleic acid, and serum albumin were used to test the ability of the dog to digest fats and proteins and to absorb fatty acids. It has been reported that both triolein and oleic acid are readily digested and absorbed by normal dogs.[7] In 5 dogs with artificial pancreatic destruction, oleic acid was absorbed, but triolein was not. This was presumably due to the necessity of digesting triolein or converting it to oleic acid before it could be absorbed.

*Fat Digestion Test.* — Triolein tagged with radioiodine was used for this test. Approximately 5 $\mu$c. of radiotriolein, together with 10 cc. of nonradioactive triolein, were administered orally. After 24 hours, feces was collected and counted. The difference between the amount of radioactivity in the feces and that administered orally was assumed to be absorbed.

*Oleic Acid Absorption Test.*—The same procedure as used with triolein was repeated with oleic acid, except that nonradioactive oleic acid was used as a carrier. This tested the ability of the intestine to absorb digested facts since oleic acid is the digested form of triolein.

*Protein Digestion.*—Serum proteins tagged with radioactive iodine and 5 Gm. of a nonradioactive carrier were tested in a manner similar to triolein. This test determined the protein digestion ability of the animal.

A 24-hour urine sample had a volume of 1046 cc. The urine was negative for sugar (Benedict's) and protein (Robert's). The specific gravity was 1.015. Hemotologic studies yielded results for BUN (16.8 mg.%), blood glucose (74 mg.%), and bilirubin (0.1 mg.%) that were considered normal. These blood tests indicate that hypoinsulinism, liver disease, and kidney disease were not a factor in this dog's condition. The feces was light brown with a sour disagreeable odor.

Dr. Clark is head professor, Department of Physiology and Pharmacology, School of Veterinary Medicine, Auburn University, Auburn, Ala.

This paper was approved by the Committee on Publications, School of Veterinary Medicine, Auburn University, Publication No. 844.

The author appreciates the assistance of Dr. L. E. Evans, Small Animal Clinic, and Dr. D. F. Johnson, Jr., Department of Pathology.

## Results and Discussion

The percentages of various nutrients that were recovered in the feces were determined (table 1). The dog failed to absorb normal amounts of proteins, fats, oleic acid, and triolein. This indicates a defect in the ability of the animal to absorb fatty acids as well as in the ability to digest fats and proteins.

Normally, fats and oils such as triolein are converted by pancreatic lipase, bile, and an alkaline pH to free fatty acids, mono- and diglycerides, and glycerin. These products then are emulsified and are combined with bile salts for absorption. If it is found, as in the case of the Boxer, that excessive amounts of radioactive fat appear in the feces, then two possibilities present themselves. One is that there has been a failure of digestion and the other is that there is a failure of absorption. In order to differentiate between these possibilities, radioactive oleic acid was fed to the dog. In this case, digestion is not necessary since oleic acid is already in a form to be absorbed directly. The results indicate that this dog not only had a digestion failure but also an absorption failure. This possibility explains why treatment with en-

**TABLE 1—Results of Digestion and Absorption Tests Using Radioactive-Tagged Foods**

| Food | Percent recovered in the 24-hr. fecal sample (Boxer) | No. tests on Boxer | Percent recovered in healthy control animals | No. of control animals used |
|---|---|---|---|---|
| Radiotagged serum albumin | 15% | 2 | Less than 4% | 7 |
| Radiotagged triolein | 42% | 3 | 5% | 13 |
| Radiotagged oleic acid | 31% | 4 | 6% | 17 |

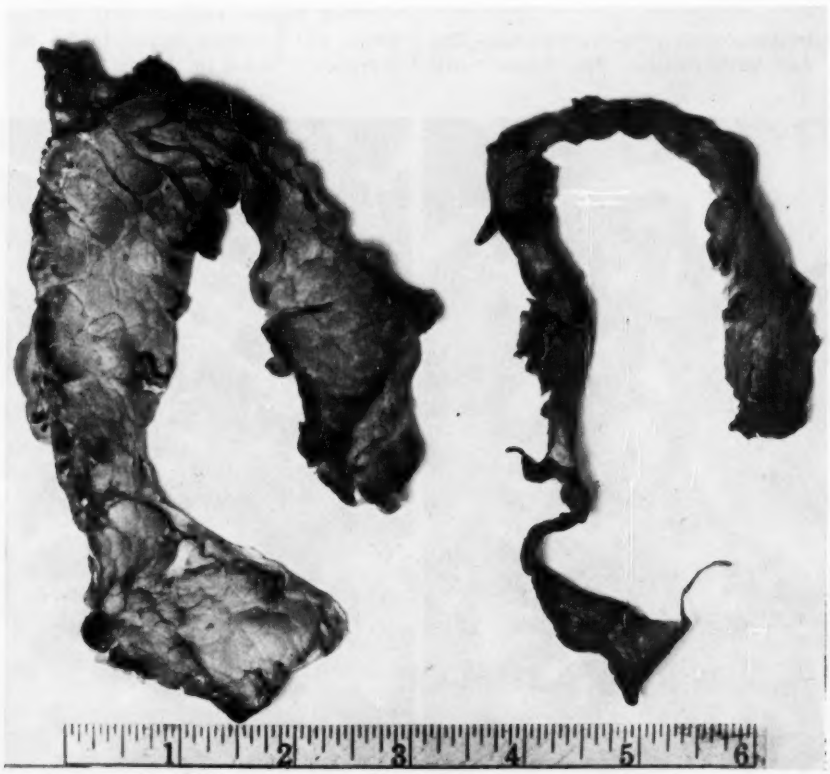


**Fig. 1—Comparison of a normal pancreas (left) with the atrophied pancreas (right) from this 11-month-old female Boxer explains digestive and absorptive failure.**

zymes and predigested food failed to cause improvement in this dog.

Protein digestion is accomplished partly by pepsin in the stomach and partly by trypsin, chymotrypsin, and carboxypeptidase of the pancreas. Additional protein digestion occurs due to intestinal enzymes. Pepsin of the stomach and trypsin of the pancreas are the enzymes primarily responsible for initiating protein digestion. Other enzymes either work on special proteins or the degradation products resulting from pepsin and trypsin digestion.

This Boxer did not digest serum proteins to a normal degree. This was undoubtedly due to lack of protein-splitting enzymes of the pancreas. The defect was not as great as for fat, probably due to the many other protein-splitting enzymes found in the stomach and intestines.

#### Necropsy Findings

Upon completion of the various tests, the dog was euthanatized. The major postmortem finding was an extremely atrophied pancreatic gland (fig. 1).

The histopathologic examination revealed an almost complete universal destruction of the pancreatic ascinar tissue. Very few of the ascini remained intact. The islet of Langerhans appeared normal. There was lymphocytic infiltration in some areas.

Catarrhal enteritis with considerable lymphoid infiltration was present.

#### Summary

The ability to digest and absorb nutrients was studied in a female Boxer with chronic pancreatic atrophy. This was done by administering triolein, oleic acid, and serum albumin which were tagged with radioiodine.

The dog not only failed to digest these nutrients, but also to absorb them. This absorption failure explains why predigested foods and enzymes failed to be of any therapeutic value in this case.

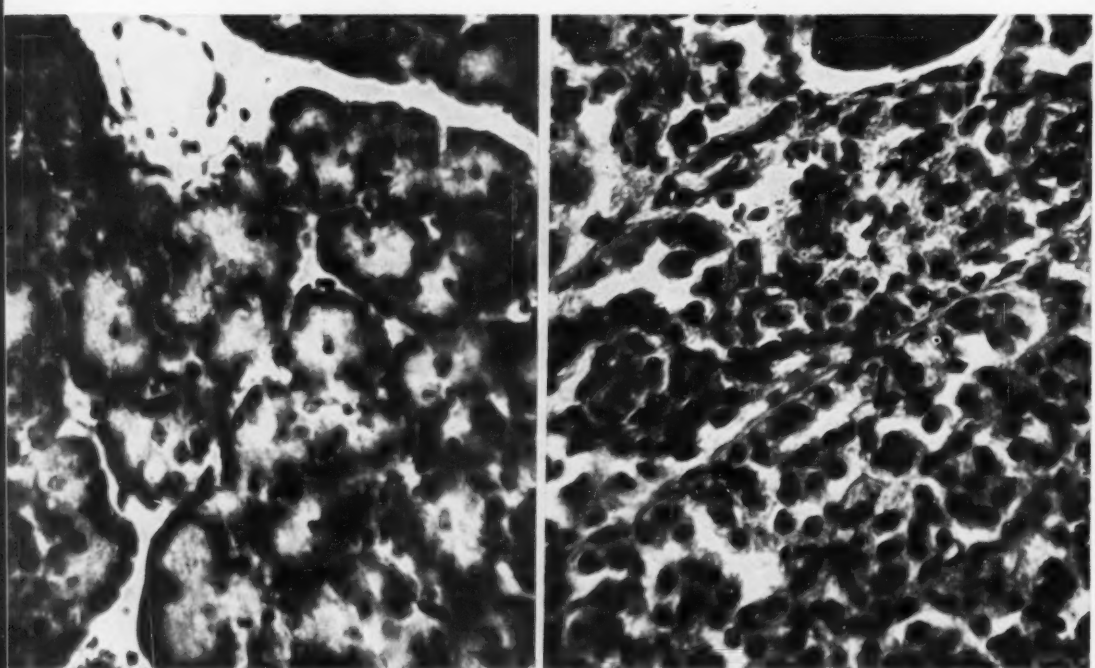


**Fig. 2—Histologic sections of a normal pancreas (left) and an atrophied pancreas (right) shows comparative lack of organized acini in the atrophied pancreas; x 500.**

**References**

[1]Archibald, J.: Canine Atrophic Pancreatitis. Proc. Book, AVMA (1953): 264-266.

[2]Archibald, J., and Whiteford, R. D.: Canine Atrophic Pancreatitis. J.A.V.M.A., 122, (1953): 119.

[3]Archibald, J.: Canine Pancreatitis. Calif. Vet., 8, (1955): 28-32.

[4]Baylin, G. J., et al.: Iodine-131 Blood Levels Correlated with Gastric Emptying Determined Radiographically. II. Fat Test Meal. Proc. Soc. Exptl. Biol. & Med., 89, (1955): 54.

[5]Coffin, D. L., and Thordal-Christensen, A.: The Clinical and Some Pathological Aspects of Pancreatic Disease in Dogs. Vet. Med., 48, (1953): 193.

[6]Davies, M. E.: The Value of Routine Testing for Pancreatic Enzyme (Trypsin) Deficiency in Canine Feces. Vet. Rec., 69, (1957): 1071.

[7]Isley, J. K., et al.: Use of I-131 Labeled Oleic Acid in a Study of Gastrointestinal Function. Proc. Soc. Exptl. Biol. & Med., 94, (1957): 807.

[8]McEvoy, J. P.: Atrophy of the Pancreas. North Am. Vet., 35, (1954): 529.

[9]Singleton, W. B., and Rhodes, J.: A Case of Pancreatitis in the Dog. Vet. Rec., 69, (1957): 110.

[10]Wolff, A., Donovan, E. F., and Nielson, S. W.: Diagnosis and Treatment of a Dog with Ascinar Atrophy of the Pancreas. J.A.V.M.A., 131, (July 15, 1957): 104.

---

***Furacin Treatment of***

# Gray Diarrhea in Mink

John D. PALARSKI, D.V.M.

GRAY DIARRHEA in mink, commonly referred to as "gray droppings," is becoming increasingly important to the mink rancher. The syndrome is characterized by increased food and water intake and a decrease in body growth and fur development. Feces of afflicted mink are gray and lack normal form. Nonassimilated food, especially fat,[1,12] makes these droppings a haven for maggots. At pelting time, ranchers find that affected mink are undersized, dehydrated, emaciated, and lacking a prime fur and, as a result, yield small or no profit. Occasionally, due to added stress, mink with gray diarrhea will succumb as cold weather approaches.

Many theories have been advanced as to the cause of gray diarrhea in mink. Some authorities believe that pancreatic dysfunction results in poor assimilation of nutrients.[5] Others postulate a genetic predisposition and urge selection of breeders from strains with no history of gray diarrhea.[1] The possibility of a virus as a causative agent cannot be excluded.[12]

On the ranch where these experiments were conducted, bacteriologic cultures from feces of affected mink revealed the presence of *Escherichia coli, Aerobacter aerogenes,* Proteus sp., Paracolobactrum sp., and *alpha*-hemolytic Streptococcus.[8] While the coliform group and Proteus sp. are generally considered nonpathogenic in the intestinal tract of mammals, they have been incriminated as the causative agents of a number of diseases. Further investigation is necessary to establish the relationship, if any, between these bacteria and gray diarrhea in mink.

Histologic findings in diseased mink are typical of enteritis, with hyperemia, hypertrophy of mucous cells, and cellular infiltration of the intestinal mucosa and submucosa. Inflamed gastric mucosa can also be observed, with no sign of pancreatic involvement.[9]

Failure of gray diarrhea to respond to sulfonamide or antibiotic therapy has con-

Dr. Palarski is a general practitioner in Kaukauna, Wis.

fronted mink ranchers with a perplexing problem. The recent report by a Canadian investigator[3] on the successful use of nitrofurazone* in the treatment of gray diarrhea in mink created interest in a class of synthetic antimicrobial agents, the nitrofurans.

**Table 1—Mink with Gray Diarrhea Treated 21 Days with Nitrofurazone**

| Group | | Nitrofurazone in feed (%) | No. of diseased mink | No. recovered |
|---|---|---|---|---|
| EXPERIMENT III | | | | |
| Medicated | A | 0.011 | 47 | 35 |
| | B | 0.022 | 53 | 42 |
| | C | 0.044 | 42 | 39 |
| Total medicated | | ..... | 142 | 116 |
| Nonmedicated controls | | ..... | 7 | 1* |
| EXPERIMENT IV | | | | |
| Medicated | A | 0.011 | 63 | 59 |
| | B | 0.022 | 53 | 52 |
| | C** | 0.033 | 28 | 25 |
| | C† | 0.033 | 32 | 28 |
| Total medicated | | ..... | 176 | 164 |
| Nonmedicated controls | | ..... | 9 | 1* |

*One diseased, nonmedicated mink in the control group recovered spontaneously.

**Mink suffering from severe gray diarrhea were intentionally placed in this group because of the higher concentration of the drug.

†This group was formed by mink from the preceding experiments: 26 mink that did not respond to the medication plus 6 nonmedicated controls.

Nitrofurazone (5-nitro-2-furaldehyde semicarbazone) is a nitrofuran widely used in human medicine for topical antibacterial prophylaxis and therapy, and in veterinary medicine, either topically in bacterial infections[11] or orally in porcine bacterial enteritis[4] as well as mammalian[10] and avian[2] coccidiosis. The therapeutic effect of nitrofurazone in gray diarrhea is probably due mainly to its antibacterial action on the harmful enteric flora.

In the following experiments, conducted to determine the efficacy of nitrofurazone in gray diarrhea in mink, 2 commercial preparations were used—product 1 (Furacin Water Mix Veterinary**) and product 2 (NFZ Mix†).

*Used as Furacin Suspensoid Veterinary, produced by Eaton Laboratories, Norwich, N.Y.; **Eaton Laboratories, Norwich, N.Y.

†Produced by Hess & Clark, Ashland, Ohio.

### Materials and Results

These experiments were performed at a Wisconsin mink ranch. The mink population exceeded 6,000 and had a history of high prevalence of gray diarrhea. Most of the prominent mink color phases were represented. All received the same basal ration, the only variable being medication.

Selection of animals into groups was random, except in experiment IV in which the most severely affected mink were placed in the group receiving the highest concentration of the drug, because of economic considerations.

To assure a uniform distribution of nitrofurazone, the medications were added to 2 gal. of water and the resulting solution added to the feed by using a mechanical mixer. The amount of feed per group of mink was pre-established, all calculations being made on a dry-weight basis.

### Prophylactic Medication

In experiment I (July 22 to Oct. 27, 1958), 126 Palomino mink were used. The 63 male kits were given feed medicated with product 1 to contain 0.011 per cent nitrofurazone continuously for 90 days. The 63 female kits served as nonmedicated controls.

After 1 month, 3 mink in the nonmedicated control group developed definite gray droppings, and a fourth animal showed questionable signs of the disease. In the medicated group, one definite case of the disease, gray diarrhea, was present. As time progressed the 3 control mink afflicted with gray diarrhea recovered spontaneously while the mink with gray diarrhea in the medicated group remained ill. No signs of decreased palatability or toxicity were observed.

In experiment II (July 22 to Oct. 4, 1958), 478 Blue Iris mink (277 male and 201 female kits) were given feed medicated with product 2 to contain 0.11 per cent nitrofurazone. The nonmedicated controls consisted of 494 kits (296 Blue Iris males, 132 Breath-of-Spring Sapphire females, and 66 Sapphire females).

After 75 days, 49 of 478 medicated mink showed pronounced signs of gray diarrhea, while 17 showed a lesser degree of involvement. Of 494 nonmedicated mink, 69 had severe and 29 mild diarrhea.

Although the difference between numbers affected in the medicated and nonmedicated groups is relatively small, gray diarrhea in the medicated group seemed less severe. At pelting time, mink graders found better quality pelts in the medicated mink.

#### Therapeutic Medication

Experiment III (Aug. 30 to Sept. 19, 1959) was started when gray diarrhea spread to the rest of the mink. The diseased animals were isolated, distributed into groups, and treated therapeutically for 21 days with different concentrations of product 1 in feed. Of 142 medicated mink, 116 (82%) responded favorably to the medication (table 1).

Experiment IV (Oct. 7 to 27, 1959)—as the number of mink with gray diarrhea continued to increase, a second group was treated for 21 consecutive days. Selection and treatment followed the same standards of the preceding experiment. Of 176 medicated mink, 154 (93%) responded well to the medication (table 1).

#### General Results

Appetites returned to normal within 1 week of medication, while droppings darkened and became firm. At pelting time, the medicated mink showed good flesh, large size, and bore a good quality pelt, while the untreated controls, showed signs characteristic of gray diarrhea: dehydration, lack of body fat, small body size, and poor fur quality.

During all the experiments, no signs of toxicity were observed. Feed consumption remained normal in all groups receiving 0.033 per cent nitrofurazone or less. In a group receiving 0.044 per cent of the drug, food consumption was decreased, possibly due to reduced palatablity of the feed containing this higher dose. Histologic examination of vital organs of mink fed high concentrations of nitrofurazone for 42 days disclosed no signs of ill effects attributable to the medication.

#### Summary

Prophylactic feed medication with 2 different commercial preparations providing 0.011 per cent nitrofurazone in feed for 75 or 90 days did not prevent gray diarrhea in 541 mink, but reduced its severity and improved the pelt quality as compared with untreated controls. A concentration of 0.033 per cent nitrofurazone in feed for 21 days resulted in recovery of 91 per cent of treated mink and was superior to either 0.022 or 0.011 per cent. A dosage of 0.044 per cent apparently reduced palatability of feed.

There was no sign of toxicity in any of 3 medicated groups. Histologic examination of vital organs in medicated mink has disclosed no deleterious effects from the medication.

#### References

[1]Benson, T. F., Cornell University Veterinary School: Personal communication, 1958.

[2]Blount, W. P.: The Value of Nitrofurazone as a Coccidiostatic Drug. Vet. Rec., 67, (Dec. 3, 1955): 916.

[3]Bowness, E. R.: Factors Affecting the Nutrition of Kits. Black Fox Magazine, 41, (Oct., 1957): 16, 30.

[4]Felgate, C. A., and Swann, H. C.: The Use of Nitrofurazone in the Treatment of Swine Paratyphoid in the Field. Vet. Rec., 68, (May 5, 1956): 259.

[5]Gray Diarrhea, Fur Farm Guide Book Issue of the American Fur Breeder. Fur Farm Publications, Inc., Duluth, Minn., 31, (Nov., 1958): 147.

[6]Hughes, D. L., Eaton Laboratories: Personal communication, 1958.

[7]MacLeod, P. F., Rogers, G. S., and Anzlowar, B. R.: The Nitrofurans in Clinical Medicine. Internat. Rec. Med., 169, (Sept., 1956): 561.

[8]McGrath, J. T.: Unpublished data, Philadelphia, Pa., 1958.

[9]McGrath, J. T.: Unpublished data, Philadelphia, Pa., 1958.

[10]Tarlatzis, C., Panetsos, A., and Dragonas, P.: Further Experiences with Furacin in Treatment of Ovine and Caprine Coccidiosis. J.A.V.M.A., 131, (Nov. 15, 1957): 474.

[11]Wilson, C. S.: A New Dosage Form of Nitrofurazone in Veterinary Medicine. Virginia Vet., 1, (Spring, 1954): 18.

[12]Worne, H. E.: Fat Metabolism of the Mink. Am. Fur Breeder, (Oct., 1958): 17.

## Heat Aids Venipuncture

In order to obtain vasodilation quickly for ready emplacement of the needle in venipuncture in man, an electric hair dryer may be used. It applies heat more conveniently than hot packs do and is especially useful on the operating table.—*Proc. Mayo Clinic, 34, (1959): 550.*

# Editorial

## The Veterinary Scientist and Cardiovascular Research

Guest Editorial

It is one of the curious paradoxes of medical research that animals have served as a medium so often for experimental production of disease and so seldom for observation of spontaneous disorders. Perhaps more so than others, cardiovascular research workers have leaned to this one-sided approach, devising all manner of intricate mechanisms for deforming heart valves; for inducing atherosclerosis; for raising the blood pressure by neural, renal, or adrenal means; and for thrombosing blood vessels; they have even "aged" animals artificially by whole body irradiation. They have succeeded in stimulating many human lesions, but how often have they truly duplicated them? Or in duplicating them does such artificial reproduction approach a solution of the mysteries of etiology? Is there any purpose in contriving a cure for a disease that may not occur naturally?

A fathomless reservoir of comparative anatomy, physiology, and pathology is waiting almost unsounded in the animal world. Why has it scarcely been tapped?

### Chronic Diseases Neglected

For utilitarian reasons, the veterinarian has had to devote himself to the acute diseases of domestic animals, to keep them healthy for slaughter, for breeding and reproduction, and for their products. He has accordingly made great strides in the prevention and therapy of infectious and parasitic diseases, in the promotion of growth and nutrition, and in the symptomatic care of the more fortunate pet animals. But there are few places in man's world for the chronically sick or salvaged elderly animal; and chronic diseases and metabolic phenomena—with which cardiovascular research most concerns itself—have been relatively neglected.

Veterinary research has made a surprisingly good showing. The National Heart Institute has made a relatively small number of grants for veterinary and comparative cardiovascular research, but in these there exists a variety, depth, and significance which bode good for future activity.[1]

### Exciting Future

Impressive in scope as it is, NHI-supported research activity in the veterinary cardiovascular field has hardly scratched the surface. Amazing and often unanticipated similarities and differences exist between animals and man. For example, the list of diseases known to be common to man and at least one species of lower animals is already a long one; but who actually can estimate its true length? How many species and subspecies have never been examined at all? How many human diseases have never been identified as such when manifested in animals? And as concerns the many diseases prevailing in one or several species for which no counterpart may ever be found in structurally similar species, what more fascinating parlor game than speculation about the reasons for this selectivity? What more fertile avenue for research than investigation into the reasons for this selectivity?

Is it really true that the chronic cardiovascular diseases so ubiquitous in man are so rare in animals, or has poverty of interest created this impression? For example, is there such an entity as canine arteriosclerotic heart disease? Has advantage been taken of the fact that the relatively long life of domestic and probably of many wild animals brings them closer to the human span than short-lived laboratory animals?

[1] A descriptive summary of grant-supported veterinary research is available from the National Heart Institute.

Much remains to be done. The natural history of animal diseases should be written and the initial documentation of data should be performed by the specialist—the veterinarian—followed up without delay by comparative animal/man studies performed by teams of veterinarians and physicians working in close collaboration. There is a tremendous need for training veterinarians in cardiovascular research methods and goals. It is no longer—if it ever was—to the advantage of either veterinarian or physician to go each his separate way, any more than it is or the clinician to walk apart from the basic scientist, or the chemist from the physiologist or pathologist. We are realizing more and more that all knowledge is a part of and contributes to all other knowledge, and that what is good for one part of knowledge is still better for the whole.—*James H. Steele, D.V.M., M.P.H., chief, Veterinary Public Health Section, Department Health, Education, and Welfare, Atlanta, Ga.*

---

## Comparative Medicine

Today no new drug, no new antibiotic, no new method of treatment of any sort is ever launched without first having had a thorough and extensive trial in experimental animals. We have become so dependent upon comparative medicine at the present time that many of us take it for granted. Be it an antibiotic, a diuretic, one of the newer tuberculosis remedies, or a specific vaccine, its development to the stage where it can be used in man is preceded by extensive study in animals by men skilled in comparative medicine. And in the field of zoonoses, those diseases common to animals and man, the two professions, veterinary and human medicine, are closely interdependent in working out, as problems in comparative medicine, the complex disease ecology requiring both veterinary and medical knowledge.—*R. E. Shope, at the Special Convocation, 75th Anniversary of the School of Veterinary Medicine of the University of Pennsylvania, Oct. 3, 1959.*

---

## Funds for Research and Development in the United States

Data from the National Science Foundation's program of surveys of research and development indicate that, during the period from 1953 to 1960, the nation's funds for research and development will increase from $5 billion to $12 billion.

This increase is due mainly to a rise of almost 160 per cent in funds used for research and development by private firms and related organizations. More than half of these funds are now coming from the federal government.—*Rev. Res. and Data on Development, 16, (1959): 1.*

from the *Research Journal*

### Canine Autogenous Skin Grafting

This investigation was undertaken in an attempt to determine the most practical method or methods and the associated techniques involved in successful skin grafting in the dog.

A total of 98 grafts were performed utilizing the following types of transplants: free full-thickness, pedicle (delayed and immediate transfer), split-thickness, and seed grafts. Observations were made with special reference to the following: (1) percentage of viability of each graft, (2) cosmetic appearance, (3) hair growth, (4) pliability of the graft, and (5) resistance to trauma.

A limited histopathologic study was made on a series of full-thickness grafts in which one graft was removed every second day for a 24-day period.

Restraint, maintenance of a satisfactory pressure bandage, and prevention of contamination of the grafted area appeared to be the greatest difficulties encountered in this study. No single type of skin graft was uniformly successful for all areas of the dog's body nor for all kinds of skin lesions. The delayed transfer of a pedicle graft appeared to be the most successful and satisfactory transplant for lesions of the extremities, especially the rear legs. The free full-thickness graft was relatively successful for lesions free from infection and excessive granulation. From the limited histopathologic studies, it appeared that there was considerable degenerative change involving the epidermis and the upper layers of the dermis during the first eight to ten days, at which time the regenerative processes equalized the degenerative changes. The blood supply appeared adequate by the twelfth day, and the transplants were rapidly returning to a nearly normal status by 24 days. The hair follicles and sebaceous glands showed the least degenerative changes.

Skin grafting in the dog has its greatest indications in facial lesions and injuries to the skin of the extremities.—[*E. C. Jensen: Canine Autogenous Skin Grafting. Am. J. Vet. Res., 20, (Sept., 1959): 898-908.*]

---

### Identification of *Erysipelothrix insidiosa*

The identification of *Erysipelothrix insidiosa* in culture and fixed tissues using the fluorescent antibody technique was investigated. Conjugated *Erysipelothrix insidiosa* antiserum stained 28 homologous strains. Of 150 heterologous strains tested, one strain of *Bacillus anitratum* gave a weak positive reaction. When used in conjunction with a counterstain, serum conjugated with rhodamine sulfonylchloride, *Erysipelothrix insidiosa* was specifically identified in formalin-fixed paraffin-embedded tissues of infected animals.—[*J. D. Marshall, W. C. Eveland, and C. W. Smith: The Identification of Viable and Nonviable Erysipelothrix Insidiosa with Fluorescent Antibody. Am. J. Vet. Res., 20, (Nov. 1959): 1077-1080.*]

---

### Contaminants in Newcastle Disease Wing-Web Vaccines

Methods to detect highly pathogenic (velogenic) Newcastle disease virus (NVD) contaminating wing-web Newcastle disease (ND) vaccines were investigated. Susceptible chickens over 6 weeks old were inoculated intravenously (i.v.) or intramuscularly (i.m.) with pure cultures of each moderately pathogenic (mesogenic) strain commonly used for vaccine production (NJ-Roakin-1946 and Mass. MK 107[L] and one velo-

genic strain (Texas-GB-1948). Mixtures of various dilutions of GB and each of the two mesogenic strains were similarly injected. Uninoculated contact controls were maintained.

A numerical expression of the pathogenicity of strains, intravenous pathogenicity index (IVPI), is proposed. The IVPI measures the severity of postinoculation signs and the rapidity with which they develop and ranges from 0.0 to 3.0 (nonpathogenic to highly pathogenic).

Of the strains tested, GB had the highest pathogenicity (IVPI, 0.85-2.38), Roakin had the lowest (IVPI, 0.0-0.12), while the pathogenicity of MK107 (IVPI 0.21-0.40) was between that of Roakin and GB.

Challenge of controls and surviving principals showed that the rate of spread from inoculated birds to contacts was characteristic of the strain used: Roakin spread hardly at all; GB spread slowly; and MK107 spread rapidly, stimulating immunity in the contact control birds. The concentration of virus and the strain used affected the IVPI, the rate of spread, and the immune response.

Rate of spread and the IVPI provide additional characteristics for differentiation of NDV strains.

The data indicates that i.m. inoculation does not provide a criterion sensitive enough to detect the presence of low concentrations of a pathogen mixed with NDV vaccine. Other methods for detection are discussed.

Extrinsic factors affect the development of signs more than low concentrations of pathogenic NDV in vaccine viruses.

It is suggested that further investigation is needed with other NDV strains and the application of this information to vaccine use, manufacture, and testing. The implications concerning interference, extrinsic factors, and immunological significance are discussed.—[*A. S. Rosenwald, R. P. Hanson, and C. A. Brandly: Studies on Pathogenic Newcastle Disease Virus Contaminants in Newcastle Disease Wing-Web Vaccines. Am. J. Vet. Res., 20, (Nov., 1959): 946-953.*]

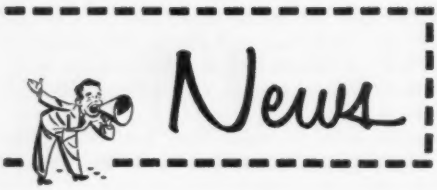
# New Books

## Methods for the Examination of Poultry Biologics

This manual contains more information than the title suggests, its 10 chapters being the work of more than 35 contributors who have presented detailed information about the microorganisms affecting poultry. The first 2 chapters introduce the procedures and methods used in working with laboratory animals, chicken embryos, and viruses. The next 4 chapters deal with Newcastle disease, infectious bronchitis, infectious laryngotracheitis, and fowlpox vaccines. The last 4 deal with possible contaminants of poultry vaccines. The isolation and identification of microorganisms of poultry are emphasized. Numerous references support the information presented in each chapter.

The primary purpose of the manual is to standardize nomenclature and methods of evaluating poultry vaccines and to resolve certain points of controversy. In an attempt to accomplish this goal, the contributors have presented ample information concerning the potency and viability of the four vaccines discussed. The importance of purity and safety of vaccines is stressed.

This publication should be particularly valuable to technicians. It also contains enough detailed information for the advanced worker to use as a guide or reference. It is not intended to be a production outline guide, but veterinary biological manufacturers will find this book a valuable aid in guiding production and testing procedures. It is highly recommended to poultry diagnosticians, researchers, and teachers.—[*Methods for Examination of Poultry Biologics. 122 pages. National Academy of Sciences, National Research Council, 2101 Constitution Ave., Washington 25, D.C. 1959. Price $3.00.*]—*DONALD E. DAVIS.*




## Dr. E. V. Morse Becomes Dean of Country's Newest Veterinary School

Dr. Erskine V. Morse (COR '44), 38, associate director of the Veterinary Medical Research Institute in Ames, Iowa, has been appointed dean of the School of Veterinary Science and Medicine at Purdue University.



Dr. Erskine V. Morse

His appointment was recommended by President Frederick L. Hovde of Purdue and approved by the University's Board of Trustees at its quarterly meeting, January 20. Dr. Morse will need several months to transfer his responsibilities at Iowa State and will not assume his duties in Lafayette until sometime in late spring.

Dr. Morse succeeds Dr. Leslie M. Hutchings who died July 22, 1959, after a lingering illness (*see* the JOURNAL, Aug. 15, 1959, p. 237). Dr. Edward O. Haelterman served as acting dean during the interim. (Dr. Haelterman is assistant dean of the school.)

Born in Peoria, Ill., Dr. Morse graduated from high school in Los Angeles, Calif., and studied agriculture at the University of California, Davis, in 1939-1940.

He then moved to New York and enrolled at Cornell University. He received his D.V.M. degree from there in 1944, following which he served in the Army Veterinary Corps for three years. Dr. Morse completed work for his M.S. degree in 1948 and for his Ph.D. degree in 1949—both at Cornell on an AVMA Research Fellowship. He majored in veterinary bacteriology with minors in biochemistry and physiology.

From 1949 to 1955, Dr. Morse was at the University of Wisconsin as assistant professor and later as associate professor of veterinary science. Following this, he spent three years on the faculty of Michigan State University where he was associate professor and then professor of microbiology and public health. He had been at Iowa State University since July 1, 1958.

Dr. Morse has had an outstanding teaching and research record in each institution where he has been situated. In addition, he is a member of many societies in veterinary science and agriculture.

He is currently president of the American Association of Veterinary Bacteriologists. He is also the author of more than 75 articles, bulletins, and reports on veterinary science and animal health.

---

### NIH Grant for Urolithiasis Investigation

For the study of urolithiasis in feedlot sheep and cattle at the School of Veterinary Medicine, University of California, in Davis, the National Institutes of Health has recently awarded a $30,000 grant. Additional fi-

nancial support has been obtained from ARS-RRF funds for this western regional project W-41.

Major pursuit in this research is directed toward isolating various urinary protein colloids on ion-exchange columns in order to ascertain which glycoproteins are involved in the matrices of the calculous material.

The research involves ultrafiltration of the urine on various concentrate and calculi-provoking diets and the subsequent biochemical analysis of the specific fractions.

Studies are aimed at first understanding what the normal urinary protein composition is in ruminant urine and, subsequently, finding the origin of these proteins within the animal organism using isotopic tracers.

Also, studies concerning the influence of endocrine secretions and broad spectrum antibiotics on urinary protein composition in ruminant urine will be conducted as well as determining their origins within the animal organism using isotopic tracers.

Already initiated, are studies concerning the influence of endocrine secretions and broad spectrum antibiotics on the urinary protein composition and on the incidence of calculi disease in the feedlot.

This study includes Dr. C. E. Cornelius from the Department of Clinical Pathology as principal investigator with Dr. Jack E. Moulton from the Department of Pathology and Dr. Ralph L. Berger, biochemist, as collaborators.

---

### State Livestock Sanitary Officials Adopt Constitution

An organization known as the National Assembly of Chief Livestock Sanitary Officials has met for several years in conjunction with the annual meeting of the United States Livestock Sanitary Association.

The group was organized in December, 1959, when they adopted a constitution and bylaws and elected the following officers: Drs. John W. Safford, Helena, Mont., president; Robert H. Singer, Lexington, Ky., vice-president; and M. N. Riemenschneider, Oklahoma City, Okla., secretary-treasurer.

The National Assembly of Chief Livestock Sanitary Officials is composed of regulatory officials from the states and territories of the United States, Canada, and Mexico; the chief livestock sanitary official of the county of Los Angeles; and officials of the Agricultural Research Service, USDA.

Purpose of the Association is to provide a forum for the free and confidential discussion of problems pertaining to the prevention, control, and eradication of diseases of domestic animals; to the administration of state livestock sanitary agencies; and to the procedures followed by the various state agencies.

---

## U.P. Gets $1 Million to Study Heart and Blood Vessels

### Dr. Detweiler to Direct Project

The National Heart Institute of the U.S. Public Health Service has awarded $1.1 million in a grant, the largest ever given to a veterinary school, to the School of Veterinary Medicine at the University of Pennsylvania—to conduct a ten-year study of comparative diseases of the heart and blood vessels in human beings and in animals.

The project which began in January, 1960, is directed by Dr. David K. Detweiler (UP '42), associate professor of veterinary pharmacology and chief of the laboratory of physiology and pharmacology. He is also chairman of a planning committee on comparative cardiovascular research for the World Health Organization.

#### New Research Center to Be Established

A new research center to be known as the University of Pennsylvania Comparative Cardiovascular Studies Unit has been established in a building adjacent to the veterinary school's campus at 39th St. and Woodland Ave., in Philadelphia.

#### $110,000 Per Year

The project is covered by a grant of $110,000 each year for ten years. First on the agenda, are routine examinations of as many animals as can be found. The initial tests include electrocardiograms and studies of the blood flow inside the hearts.

Research methods will include many of the tests and diagnostic procedures used in clinical heart disease studies in human beings. Corrective surgery will be attempted on some animals having congenital defects similar to human heart defects.

---

### A.P.I.'s Name Changed to Auburn University

After the Alabama Legislature passed an act changing the name of Alabama Polytechnic Institute to Auburn University, Gov. Patterson signed it into law on Oct. 30, 1959.

Official announcement from the School,

indicating reason for the change, said that while A.P.I.'s officials had tried for years to back up its former name, nearly everyone persisted in calling it Auburn.

## Among the States and Provinces

### California

ALAMEDA-CONTRA COSTA.—Newly elected officers of the Alameda-Contra Costa V. M. A. are: Drs. Thomas B. Condon, Berkeley, president; John S. Blackard, El Sobrante, vice-president; L. M. Proctor, Concord, secretary; and D. B. Martin, Oakland, treasurer.

The Association now meets on the fourth Wednesday of every month.

s/LAWRENCE M. PROCTOR, *Secretary.*

• • •

ORANGE BELT.—Officers of the Orange Belt V. M. A. for 1960 are as follows: Drs. M. C. McSpadden, Banning, president; C. E. Childs, Rialto, vice-president; and K. R. Wilcox, Upland, secretary-treasurer.

s/K. R. WILCOX, *Secretary.*

### District of Columbia

WASHINGTON, D. C.—DR. J. D. LANE LEAVES TENNESSEE FOR A POSITION IN THE PROCEDURES AND TRAINING OFFICE.—Dr. James D. Lane (ISU '43), formerly of Memphis, Tenn., became a member of the program services and development staff of the meat inspection division on Nov. 1, 1959, and was assigned to a position in the procedures and training office in Washington.

Dr. Lane had been assistant inspector in charge in Memphis since March, 1958. Since entering the Service in February, 1948 at Oklahoma City, he has been stationed in Cincinnati, Ohio, and South St. Paul, Minn.

In addition, Dr. Lane has actively participated in the radiation training programs of the department. In this connection, he was detailed to the Atomic Energy Commission in 1957, to take part in its fallout study program held at Mercury, Nev. As a result of his extensive training in radiation, Dr. Lane has been able to instruct many USDA employees on this subject.



**Dr. James D. Lane**

Dr. James D. Lane is a native of Columbus, Ohio.

s/C. H. PALS, *Correspondent.*

### Florida

TAMPA.—The thirtieth annual meeting of the Florida State V. M. A. was held at the Hillsboro Hotel in Tampa, Oct. 4-6, 1959, with Dr. Robert P. Knowles presiding.

Guest speakers included: Drs. Vladimir Dvorkovitz, Kansas City, Mo.; Joseph F. Gennaro, Gainesville, Fla.; R. W. Ormsbee, Stockton, Calif.; W. Harper Rhodes, Philadelphia, Pa.; V. R. Saurino, Coral Gables, Fla.; J. C. Siegrist, Bloomfield, N.J.; Leonard Skamser, Levittown, Pa.; R. D. Radeleff, Kerrville, Texas; and Mr. Robert J. Brown, Brooklyn, N.Y. Forty-five Florida veterinarians also participated.

A feature of the program was an illustrated address by Dr. Clifford C. Snyder (M.D.), Miami, which covered his recent trip to Russia and a talk on plastic surgery. Dr. Snyder was recently elected an honorary member of the Association.

#### Dr. J. H. Yarborough Chosen "Veterinarian of the Year"

At the meeting, Dr. James H. Yarborough (ISC '23), Miami, was awarded the "Veterinarian of the Year" Award by the Florida State V. M. A. for his outstanding and meritorious work in the advancement of the veterinary profession.

Dr. Yarborough was born in Blackstock, S. C. He graduated from Clemson College, Clemson, S. C., with a B.S. degree in Agri-



Dr. James H. Yarborough

culture in 1920, and received his D.V.M. degree and a M.S. degree in veterinary physiology from Iowa State University in 1923.

After serving as state veterinarian for two years, he came to Miami (1925) and established the Yarborough Animal Clinic, in 1927, which is now regarded as one of the largest, most modern and up-to-date small animal hospitals in the South.

Dr. Yarborough has been Dade County veterinarian since 1934. He was track veterinarian for the Hialeah Race Course 1932-1957. In addition, he and his staff are veterinarians for the Biscayne, West Flagler, and Miami Beach kennel clubs.

He has served on the executive board and as president of the AAHA, as president of the Florida State V. M. A., as a member of the AVMA Board of Examiners, on the Florida Board of Veterinary Examiners for six years, and is now president of the South Florida V. M. A.

Dr. Yarborough's one son, James H. Yarborough, III, is now a preveterinary student at the University of Florida.

Officers elected at the meeting are: Drs. William F. Jackson, Lakeland, president; and E. L. Matthews, Palatka, president-elect.

## Hawaii

HONOLULU—DR. SLACK NAMED FEDERAL VETERINARIAN IN CHARGE OF ADE ACTIVITIES.—Appointment of Dr. J. Howard Slack (WSU '31) as veterinarian in charge of USDA's animal disease eradication activities in Honolulu, Hawaii, became effective May 31, 1959.

In his new assignment, Dr. Slack will be responsible for administering the Division's programs dealing with control and eradication of diseases of livestock and poultry in cooperation with the state officials of Hawaii.

Dr. Slack was formerly stationed at Helena, Mont., as assistant veterinarian in charge of animal disease eradication activities; a post he had held since 1947.



Dr. J. Howard Slack

A native of Washington, Dr. Slack engaged in a general practice at Colfax, Wash., until March, 1934, at which time he joined the former BAI and subsequently was assigned to the field force in Montana.

In November, 1934, Dr. Slack was assigned to meat inspection at Indianapolis, Ind., returning to field work in Montana in 1935. In June, 1938, he was assigned to scabies eradication work in Nebraska. Dr. Slack was then transferred back to the Montana field force in September, 1939 until his appointment as assistant veterinarian in charge in 1947.

## Illinois

CHICAGO—DR. H. M. STEINMETZ TRANSFERRED.—Dr. Hyman M. Steinmetz (KSU '46) has been promoted and transferred to the assistant inspector in charge at the USDA's Chicago meat inspection station. He succeeds Dr. D. Warner Anderson who re-

cently became inspector in charge in Sioux Falls, S. D., upon the retirement of Dr. Jennings B. Sigrist.

Dr. Steinmetz went to Chicago from Waterloo, Iowa, where he had served as the



Dr. Hyman M. Steinmetz

inspector in charge since July, 1958. He entered the meat inspection service at Boston, Mass., in 1950 and, in 1953, was transferred to Baltimore, Md., where he spent five years in a supervisory capacity.

Dr. Steinmetz is a native of Boston, Mass.

s/C. H. Pals, *Correspondent.*

## Iowa

Cedar Valley—Election of Officers.—The Cedar Valley V. M. A. elected the following officers in September: Drs. Paul Wieres, Allison, president; A. J. Murphy, Waverly, vice-president; and Emil L. Koch, Plainfield, secretary.—*Iowa Veterinarian, 6, (Nov.-Dec., 1959): 34.*

• • •

Ames—Mr. J. F. Shook Joins National Laboratory.—Mr. James F. Shook, formerly of the Animal Inspection and Quarantine Division of the Agricultural Research Service, has recently joined the staff of the Animal Disease and Parasite Research Division as administrative officer for the new National Animal Disease Laboratory at Ames.

Mr. Shook has responsibility for developing and coordinating operational and personnel activities at this new Laboratory, designed to provide protection to the country's livestock and poultry industries through research.

s/O. L. Osteen, *Correspondent.*

## Kansas

Manhattan—Twenty-Second Annual Conference.—The 22nd annual conference for Kansas Veterinarians will be held at the School of Veterinary Medicine, Kansas State University, May 19-21, 1960.

The first day of the conference will be devoted entirely to the discussion of infertility in cattle.

s/Donald C. Kelley, *Chairman.*

## Maine

Orono.—Following are resumes of the July and October meetings of the Maine V.M.A. in chronological order:

### Summer Meeting

The regular summer meeting of the Maine V.M.A. was held at Overlook Farm in Casco on July 8, 1959. Twenty-two members attended the business meeting at which Dr. Phil Brown, president, presided.

Dr. Warren Hoag discussed the High School Science Fair and biological "research" problems and explained that the Jackson Memorial Research Laboratory will conform with the standards of the Institute of Laboratory Research.

In addition, the Association voted to consider a summer meeting date prior to July 1 in the interest of a wider choice of good meeting places. Members were asked to give consideration to this point.

The scientific portion of the program included: Drs. Jerry Roundtree—sanitation within the poultry industry; Donald Payne—parasitism and malnutrition in Maine's sheep; Warren Hoag—the veterinarian's role in research; Stanford Merrill—new slaughterhouse and meat-processing inspection laws; Ladd Heldenbrand—needed veterinary services at Scarboro Downs; Russell Abbott—radioisotopes in respect to the blast area; Harold Sherman—spread of vibriosis;

Bradford Brown—Cornell Veterinary school; and Sidney Stiles—AAHA meeting in Colorado Springs.

#### Fall Meeting

The fall meeting of the Maine V.M.A. was held at the Thorndike Hotel in Rockland, Oct. 21, 1959.

At the business meeting, committee reports were given and Drs. A. E. Coombs and F. Langdon Davis reported on the 1959 AVMA Convention in Kansas City.

Presenting scientific reports were: Drs. James Elliot, Harold Chute, Allen Corey and G. W. Breed. In addition, Dr. Bradford Brown spoke on "Diseases in Small Animals."

Two movies and a buffet dinner were also included on the agenda. Dr. McClure Day, who had been too ill to participate in the summer program, was able to appear at this meeting and he presented an illustrated talk entitled "North of Moosehead."—*The Maine Veterinarian, 22, (Oct., 1959): 1-3.*

### Michigan

EAST LANSING.—CANCER TO BE DISCUSSED AT FIRST ANNUAL COMPARATIVE MEDICINE MEETING.—The First Annual Michigan Conference on Comparative Medicine will be held at the Kellogg Center for Continuing Education at Michigan State University, March 21-22, 1960.

This Conference is being sponsored jointly by the Michigan Department of Health, the University of Michigan Medical School, the Wayne State University College of Medicine, and the College of Veterinary Medicine at Michigan State.

At a joint meeting of the representatives from the institutions named above, it was agreed that an annual interdisciplinary conference such as this, would reap many benefits.

Consequently, the group decided to undertake a series of conferences and to select a different theme for each. The program for this first conference will deal with the basic and comparative aspects of cancer.

Among the veterinarians scheduled to appear on the program are: Drs. B. V. Alfredson, W. W. Armistead, R. C. Belding, J. C. Bell, B. R. Burmester, G. H. Conner, W. M. Decker, R. F. Langham, C. C. Morrill, U. V. Mostosky, R. G. Schirmer, and J. J. Stockton.

Inquiries should be addressed to: Clayton H. Wells, Conference Consultant, Kellogg Center for Continuing Education, Michigan State University, East Lansing, Mich.

s/W. W. ARMISTEAD, *Dean, M.S.U.'s College of Vet. Med.*

• • •

EAST LANSING.—NEW MEDICAL CENTER PROPOSED.—A new medical center, unusual in scope and design and with international implications, has been proposed recently at Michigan State University.

Preclinical students in medicine, veterinary medicine, medical technology, nursing, dentistry, and public health would share the same classrooms, laboratories, equipment and, to some extent, teachers, by means of a central basic medical science faculty.

The plans call for no multiplication of preclinical departments simply to preserve the distinction between human beings and animal anatomy or physiology. A central medical library would serve the center as well. Research facilities could also be shared because animals are used for most medical research.

Not only would costs be reduced by this sharing, but there would be great gains in interdisciplinary communication and in productive efficiency by having various kinds of medical scientists housed together and working side by side.

Included in the medical center, at first, would be a college of medicine, college of veterinary medicine, a school of medical technology, and a school of nursing.

Added later would be a college of dentistry, a curriculum in public health, and a medical research institute. Special attention to the problems of ageing would be given in a geriatric hospital.

At the present time, Michigan State has a College of Veterinary Medicine, School of Nursing, School of Medical Technology, and strong premedical, predental, and preveterinary programs. It also has numerous other programs which are closely related to health. A number of facilities in the Lansing area could also be utilized in the development of the medical center.

Much of the research done on animals in

medical schools is unknown to veterinarians. Conversely, much research done on animals by veterinarians is unknown to physicians, even though it may have important implications for the health of human beings.

The center would espouse the comparative approach to medicine. It would guarantee the prompt and direct interchange of useful information between the several medical disciplines and thereby both attract and develop medical scientists of broader viewpoint and greater versatility.

### Nebraska

LINCOLN—DR. NORDSTROM APPOINTED HEAD OF DISEASE ERADICATION PROGRAM.—Dr. E. H. Nordstrom (ISC '29) has been appointed veterinarian in charge of the U.S.D.A. Animal Disease Eradication activities in Lincoln, where he is responsible for administering the programs dealing with control and eradication of brucellosis and tuberculosis of cattle and sheep, and also cattle scabies, bluetongue of sheep, and other major diseases of livestock.

After receiving his D.V.M. degree, Dr. Nordstrom practiced in Nebraska for five



Dr. E. H. Nordstrom

years and then joined the U.S.D.A. in Oklahoma in 1934. From 1937 to 1940, he served in the meat inspection division, then was assigned to the BAI field force in Iowa until 1954. He also was assistant veterinarian in charge in Kansas until 1956 when he became chief of the Animal Disease Eradication program in Albuquerque, N.M.

Dr. Nordstrom succeeds Dr. D. F. Werring (ISC '40), who was appointed veterinarian in charge at St. Paul, Minn. (*see* the JOURNAL, Sept. 15, 1959, p. 352).

### New Jersey

COLLINGSWOOD.—At the November meeting of the Southern New Jersey V.M.A., the following roster was elected: Drs. Walter E. Snyder, Haddonfield, president; Marvin Rothman, Collingswood, vice-president; Jay Simmons, Audubon, secretary; and Florian J. Olbrich, Hilltop, treasurer.

S/JAY SIMMONS, *Secretary.*

### Ohio

COLUMBUS—DR. R. L. KNUDSON TRANSFERRED TO WASHINGTON, D.C.—Dr. Robert L. Knudson (OSU '34), formerly veterinarian, in charge of the USDA's animal disease eradication activities in Columbus, was pro-



Dr. Robert L. Knudson

moted to assistant director of the ADE Division in Washington, D.C., effective in August, 1959.

Following graduation from Ohio State University, Dr. Knudson joined the former BAI in Ohio's tuberculosis eradication program. In March, 1935, he was reassigned to brucellosis laboratory and field work in Augusta, Maine. He subsequently was engaged in meat inspection in Buffalo, N.Y. He later served in the pathological laboratory in Chicago, Ill., and in 1938, he was transferred to the pathological division in Beltsville, Md.

In 1942, he entered the Air Force, serving until 1946, when he was discharged as a major. He returned to the ADE station in Maryland and was reassigned shortly thereafter as assistant veterinarian in charge in Atlanta, Ga.

Dr. Knudson is a past secretary of the Ohio V.M.A. and an honorary member of the Columbus Academy of Veterinary Medicine and the Cincinnati V.M.A. He has also served as a lecturer at Ohio State University's College of Veterniary Medicine, enjoying equal status at the Ohio Experiment Station.

In 1958, he was awarded the Professional Interfraternity Council Award at Ohio State University (*see* the JOURNAL, June 15, 1958, p. 546).—*The Ohio Veterinarian*, 8, (*Aug.*, 1959):6.

• • •

COLUMBUS—C. E. BOYD TO HEAD ADE ACTIVITIES IN OHIO.—Dr. Carl E. Boyd (AU '43) has been appointed veterinarian in charge of the USDA's animal disease eradication activities in Columbus, effective in August, 1959.

Dr. Boyd succeeds Dr. R. L. Knudson



Dr. Carl E. Boyd

who was promoted to assistant director of the Animal Disease Eradication Division in Washington, D.C. (see the first article under Ohio). Dr. Boyd had formerly been veterinarian in charge in Richmond, Va., for three years.

Born in Esther, Md., Dr. Boyd attended Alabama Polytechnic Institute and received his D.V.M. degree from there in 1943. During his career, he has served the ADE Division and the former BAI in the following capacities: ten years in Georgia on the field force; one year in Massachusetts as assistant veterinarian in charge of Massachusetts and Rhode Island; two years in Ohio as assistant veterinarian in charge; beside the three years he was veterinarian in charge in Virginia before his appointment to Ohio.

Dr. Boyd received special training in vesicular disease diagnosis in 1953. Since that time, he has conducted a number of field investigations into suspected vesicular disease conditions.

He is a member of the AVMA, U.S. Livestock Sanitary Association, and the National Association of Federal Veterinarians, among others.

• • •

COLUMBUS—DR. M. B. HUFFMAN NEW ASSISTANT OF ADE ACTIVITIES IN OHIO.—Dr. M. B. Huffman (TEX '49) was appointed assistant veterinarian in charge of ADE activities for the USDA in Ohio, effective in July, 1959.

Dr. Huffman is a native of Texas. Shortly after his graduation from the A.&M. College of Texas, he joined the former BAI, doing



Dr. Mahlon B. Huffman

field work on tuberculosis and brucellosis eradication in North Carolina.

After participation in the veterinary ad-

ministrator development program in 1955, Dr. Huffman was appointed assistant veterinarian in charge of the ADE Division in Kentucky, for over two years. In May, 1958, he went to Baton Rouge, La., where he remained until his appointment to Ohio.

Dr. Huffman holds the rank of Lt. Colonel in the U.S. Army Reserve Corps. He is a member of the AVMA and the National Association of Federal Veterinarians.

### Pennsylvania

PHILADELPHIA—SEEING EYE FELLOWSHIP ESTABLISHED AT U. P.—The University of Pennsylvania School of Veterinary Medicine has received a $7,500 grant from The Seeing Eye, Incorporated, for the establishment of The Seeing Eye—Dorothy Harrison Eustis Fellowship in Dermatology.

Dr. Richard Hoey, a 1959 graduate of the School of Veterinary Medicine there, is the first to be awarded this Fellowship. He is currently enrolled in the University's Graduate School of Medicine pursuing further study in dermatology. In addition, he is continuing veterinary dermatological research which he started while in veterinary school.

The late Mrs. Eustis was the founder of The Seeing Eye, Incorporated, an organization dedicated to the training of intelligent dogs to aid the blind. She was the daughter of a former University Provost, Dr. Charles Eustis Harrison, and received an Honorary Degree of Master of Science from the University in 1934, for her efforts to help blind persons.

Concentrated research in the field of veterinary dermatology was begun at the University's School of Veterinary Medicine ten years ago by Dr. Frank Kral, professor of veterinary dermatology, and a pioneer in this field. Working under Dr. Kral, Dr. Hoey will devote his attention to a study of the cause and treatment of skin diseases affecting dogs.

The trustees of The Seeing Eye have expressed the hope that the Dorothy Eustis Fellowship will stimulate other research grants that may ultimately improve the health and longevity of all dogs, including those that serve blind people.

### South Dakota

RAPID CITY.—The annual business meeting of the West River V. M. A. was held Dec. 19, 1959, at the Sheraton-Johnson Hotel in Rapid City. (The West River Association comprises the western half of the state.)

Election of officers was held as follows: Drs. Robert A. Policky, Spearfish, president; and James Bastian, Edgemont, vice-president and secretary-treasurer.

s/ROBERT A. POLICKY, *President.*

• • •

SIOUX FALLS—DR. J. B. SIGRIST RETIRES AS INSPECTOR IN CHARGE.—Dr. Jennings B. Sigrist (STJ '23) retired December 31, from the Meat Inspection Division of the U. S. Department of Agriculture, after completing thirty-five years of service.

At the time of his retirement, Dr. Sigrist was inspector in charge of the Sioux Falls station where he had been assigned since 1952. Dr. D. Warner Anderson (COL '39) succeeded him.



**Dr. Jennings B. Sigrist**

Dr. Sigrist joined the Agricultural Research Service in 1924 at Sioux City, Iowa, and has held supervisory positions in many locations, including South Saint Joseph, Mo., and Salt Lake City, Utah.

Present retirement plans call for a return to South Saint Joseph, his home town, where Dr. and Mrs. Sigrist are looking forward to enjoying a well-earned retirement.

SIOUX FALLS—DR. D. W. ANDERSON SUCCEEDS DR. SIGRIST.—Dr. D. Warner Anderson (COL '39) has been transferred to inspector in charge of the Sioux Falls meat inspection station of the U. S. Department of Agriculture, succeeding Dr. J. B. Sigrist who retired on December 31.



**Dr. D. Warner Anderson**

Dr. Anderson went to Sioux Falls from Chicago, Ill., where he had served as assistant inspector in charge. He entered the service in 1940 at Sioux Falls and subsequently filled assignments at Orangeburg, S. C.; New York City, N. Y.; and at Storm Lake and Waterloo, Iowa.

Dr. Anderson is a native of Greeley, Colo.

## State Board Examinations

NORTH CAROLINA—June 20-22, 1960, Grove Park Inn, Asheville, N.C. Dr. James I. Cornwell, Secretary-Treasurer, North Carolina State Veterinary Examining Board, P.O. Box 9038, Asheville, N.C.

## Deaths

Star indicates member of AVMA

★**Fred F. Bushnell** (COR '33), 51, Manchester, Conn., died suddenly, following a heart attack, on Nov. 30, 1959.

Born in Middletown, Conn., he moved to Manchester after graduation from the New York State Veterinary College. Dr. Bushnell served with the Veterinary Corps of the First Service Command during World War II.

For many years, he was a meat inspector for the town and, from 1946 to 1948, he served as Connecticut's state veterinarian. Dr. Bushnell was also a past-president of the Connecticut V.M.A. (1940-1941).

★**Samuel Glenn** (COR '21), 65, Pittsburgh, Pa., died Nov. 23, 1959, while on vacation in Miami Beach, Fla.

Dr. Glenn was a native of Utica, N.Y. During the 30-year course of his practice in Pittsburgh, he built three hospitals, two of which still bear his name.

**Horace D. Lambert** (AVC '92), 89, Beverly, Mass., died Oct. 13, 1959.

Dr. Lambert served for over 50 years as the city's Inspector of Animals. In 1942, he was honored by the Massachusetts Veterinary Association for distinguished service.

★**Leonard H. Melles** (ISU '43), 48, Omaha, Neb., died Nov. 19, 1959, following a heart attack. He was in Chicago, Ill., on a business trip at the time of his death.

Dr. Melles was born in Weir, Holland. He received his B.S. degree from Morningside College and his D.V.M. degree from Iowa State University. During World War II, he served in the Army Veterinary Corps for three years.

Before joining Corn States Laboratories, Inc., Dr. Melles practiced in Paullina, Iowa, for ten years. He traveled Western Iowa and Northeastern Nebraska for the company for over three years before becoming supervisor of its sales force.

Dr. Melles was a former secretary of the Northwest Iowa V.M.A.

★**Ralph Springer** (IND '16), 63, Indianapolis, Ind., died Oct. 23, 1959.

A life-long resident of Indianapolis, Dr. Springer had practiced there for 43 years. He was a veteran of World War I.

**William H. Todd** (CIN '13), 70, Lorain, Ohio, died Dec. 3, 1959, after a two-year illness.

A life-long resident of Lorain, he had served the city's Department of Health for 23 years.

# Women's Auxiliary

### Nebraska

LINCOLN.—The Women's Auxiliary to the Nebraska Veterinary Medical Association held its annual business meeting and brunch at the Cornhusker Hotel in Lincoln, on December 2.

Mrs. E. E. Leasure, AVMA Auxiliary president-elect, was the guest of honor. Officers for 1960 were elected as follows: Mrs. Richard Claybaker, Chester, president; Mrs. C. B. Schwab, Fairbury, vice-president; and Mrs. Frank Wilcoxon, Albion, secretary-treasurer.

s/MRS. C. B. SCHWAB, *Vice-President.*

### Washington

SEATTLE.—The Women's Auxiliary to the Seattle V.M.A. is an active growing organization. The Auxiliary meets once a month on the same evenings as do their husbands. Following both sessions, a joint coffee hour is held.

Due to these informal social hours, the members have become better acquainted. In addition, purely social events e.g., a Christmas party and a spring dinner dance (the latter includes neighboring groups) are held for the same reason.

The Auxiliary also sponsors the Pent House Theater, which is part of the University of Washington's School of Drama, as its main fund raising project.

It makes its major contributions to the College of Veterinary Medicine at Pullman, presenting books to the library there and children's clothing and gift certificates to the student wives. In addition, it donates to the Student Loan Fund and to the Research Fund.

### Wisconsin

HUSTISFORD.—The Women's Auxiliary to the Southeastern Wisconsin V.M.A. meets every third Thursday from March through November, in conjunction with their husbands' meetings.

Newly elected officers for 1960 are: Mrs. Daniel Paradee, Hustisford, re-elected president; Mrs. L. J. Algiers, Hartford, vice-president; and Mrs. R. I. Houck, Waterloo, secretary-treasurer.

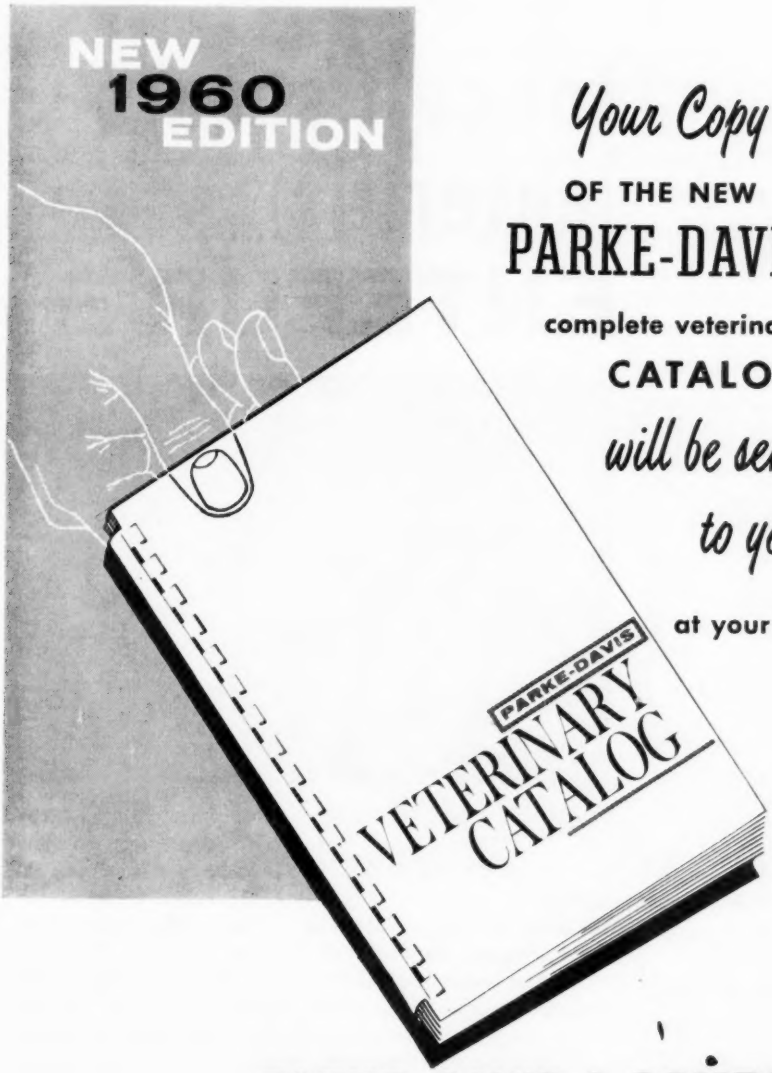
The Auxiliary made contributions to the AVMA Student Loan Fund, the Memorial Fund, and to the AVMA Research Fund.

### New York



**Newly-elected officers of the Women's Auxiliary to the New York State V.S. gather with the outgoing president following elections during the 52nd annual Conference for Veterinarians held at Cornell University January 6-8.**

**Left to right—Mrs. Charles E. Fletcher, New York City, president; Mrs. DuBois Jenkins, Catskill, secretary; Mrs. George T. Dorney, Pleasant Valley, immediate past-president; Mrs. Donald C. McKown, Franklin, membership chairman; Mrs. John C. Sweatman, Roxbury, treasurer; Mrs. Thomas J. Love, Watkins Glen, president-elect.**




*Your Copy*

**OF THE NEW**

# PARKE-DAVIS

**complete veterinary**

**CATALOG**

*will be sent*

*to you*

**at your request**

## PARKE, DAVIS & COMPANY

**DETROIT 32, MICHIGAN**

Please send a copy of the Parke-Davis Veterinary Catalog and Therapeutic Index.

**NAME** _____ **DEGREE** _____

(Please Print)

**ADDRESS** _____

**CITY** _____ **ZONE** _____ **STATE** _____

★ AVAILABLE ONLY IN THE UNITED STATES

# for calf scours (enteritis)

# ENTEFUR® *bolus veterinary, small*



*bactericidal action promptly controls symptoms in 93-95%[1,2] of calves*

*no development of resistant bacterial strains or of cross-resistance*

Remissions of calf scours following treatment with ENTEFUR have been of a dramatic nature and uniformly high. In widespread field tests, cure rates of 93% and 95% have been obtained.[1,2]

ENTEFUR is a bolus containing the new antibacterial nitrofuran, FURAMAZONE® (brand of nifuraldezone) 1 Gm., and bismuth subsalicylate 0.26 Gm. for its mildly astringent, antidiarrheal action. FURAMAZONE is a *new* nitrofuran selected for its specific bactericidal activity against gram-negative and gram-positive enteric bacteria, including the virulent strains of E. coli found in calf enteritis.

ENTEFUR is nontoxic even when administered in doses well above therapeutic levels.

Dosage: 1 bolus perorally, twice daily, for 2 or 3 days.

Supplied: Boluses of 3.3 Gm. each, in box of 24.

1. Osborne, J. C. *in* New Horizons in Chemotherapy. Proceedings of First Regional Conference on the Nitrofurans in Veterinary Medicine. In press.
2. Bull, W. S.: N. Amer. Vet. 38: 3 (Jan.) 1957.

*Available through your professional veterinary distributor*

NITROFURANS—a *new* class of antimicrobials—neither antibiotics nor sulfonamides



EATON LABORATORIES, NORWICH, NEW YORK

# WHAT IS YOUR *Diagnosis?*

***Make your diagnosis from the picture below — then turn the page ▸***



**Fig. 1—Anteroposterior and lateral radiographs of left hock joint of the Quarter horse.**

*History.*—An 8-year-old male Quarter horse had been lame in the left hock joint for over a year. There had been no treatment. Anteroposterior and lateral radiographs were taken (fig. 1).

## Here Is the Diagnosis

(*Continued from preceding page*)

*Diagnosis.*—Periosteal new bone proliferation (exostosis) on the anterior and medial aspect of the left hock joint of the Quarter horse; also arthritis with bony ankylosis of the proximal and distal rows of tarsal bones (bone spavin).

*Comment.*—The bony ankylosis appears to be a chronic infectious arthritis. Trauma due to poor conformation is believed to have caused this ankylosis without infection.

The prognosis was unfavorable, and no treatment was attempted.

This report was submitted by William D. Carlson, D.V.M., Ph.D., radiologist, College of Veterinary Medicine, Colorado State University, Fort Collins.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

## Instructions to Authors

JOURNAL *of the AVMA*

**Exclusive Publication.**—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals, which is ethical publication procedure.

**Manuscripts.**—Manuscripts, including **footnotes, references,** and **tables,** must be typewritten, **double-spaced,** on 8½- by 11-in. bond paper, and the original and one carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise. Short, simple sentences are clearer and more forceful than long, complex ones.

**Illustrations.**—Photographs should be furnished in glossy prints, and of a size that will fit into the JOURNAL of the American Veterinary Medical Association with a minimum of reduction. Photomicrographs which can not be reduced should be marked for cropping to 1-column or 2-column width. Identifying marks within the photomicrographs, such as arrows, letters, or numbers, should be clearly marked with black India ink or white opaque ink to insure good contrast for reproduction and must be large enough to stand reduction, if necessary.

Drawings, graphs, and charts should be made clearly and accurately in India ink on white paper and a glossy print of them submitted when possible. Numbers or letters appearing on graphs or charts should be large enough to allow for any reduction necessary for the chart or graph to fit JOURNAL pages. Blue lines in graph paper drop out in reproduction; therefore, if lines are required they must be drawn in black ink. All illustrations should bear the name of the author and the illustration number on the back.

**Tables.**—Tables should be simple and typed **double space.** Complex tables are not conducive to perusal. It is wiser to summarize complex material than to tabulate it.

**References.**—References should be typed **double space,** in alphabetical order, and should be prepared in the following style: name of author, title of article, name of periodical with volume, year, and page numbers. References to journals not commonly known should give the complete name of the periodical, and where published so that they may be added to our reference files. When books are cited, the name of publisher, location, edition, and year should be given.

# TO TREAT OR PREVENT SURFACE INFECTIONS

# FURACIN®

brand of nitrofurazone



bactericidal against a wide range of gram-negative and gram-positive organisms / negligible development of bacterial resistance / nontoxic to mammalian tissue / no bacterial cross-resistance / no cross-sensitization to other agents / stable and effective in presence of blood, pus, milk, serum

**SPRINKLE FURACIN soluble powder veterinary**

in bacterial infections of the eye and ear, operative wounds, burns

*Formula and Supply:* FURACIN 0.2% in polyethylene glycol.
*Plastic "puff" bottle of 10 Gm.*

**SPREAD FURACIN dressing veterinary**
**dressing veterinary with anesthetic**

in wounds, burns, ulcers, pyodermas, osteomyelitis of compound fractures, secondary bacterial infections

*Formulas and Supply:* FURACIN 0.2% in a water-soluble base. *Jars of 5 oz. and 1 lb.* FURACIN Dressing Veterinary with Anesthetic contains butacaine sulfate 0.5%. *Tube of ½ oz. and jar of 1 lb.*

**SPRAY FURACIN solution veterinary**

especially useful for treating painful lesions —can be applied directly or with atomizer

*Formula and Supply:* FURACIN 0.2% in a water-miscible liquid of polyethylene glycol and water. *Bottles of 1 pint, 1 gal., and 500 cc. with rubber stopper.*

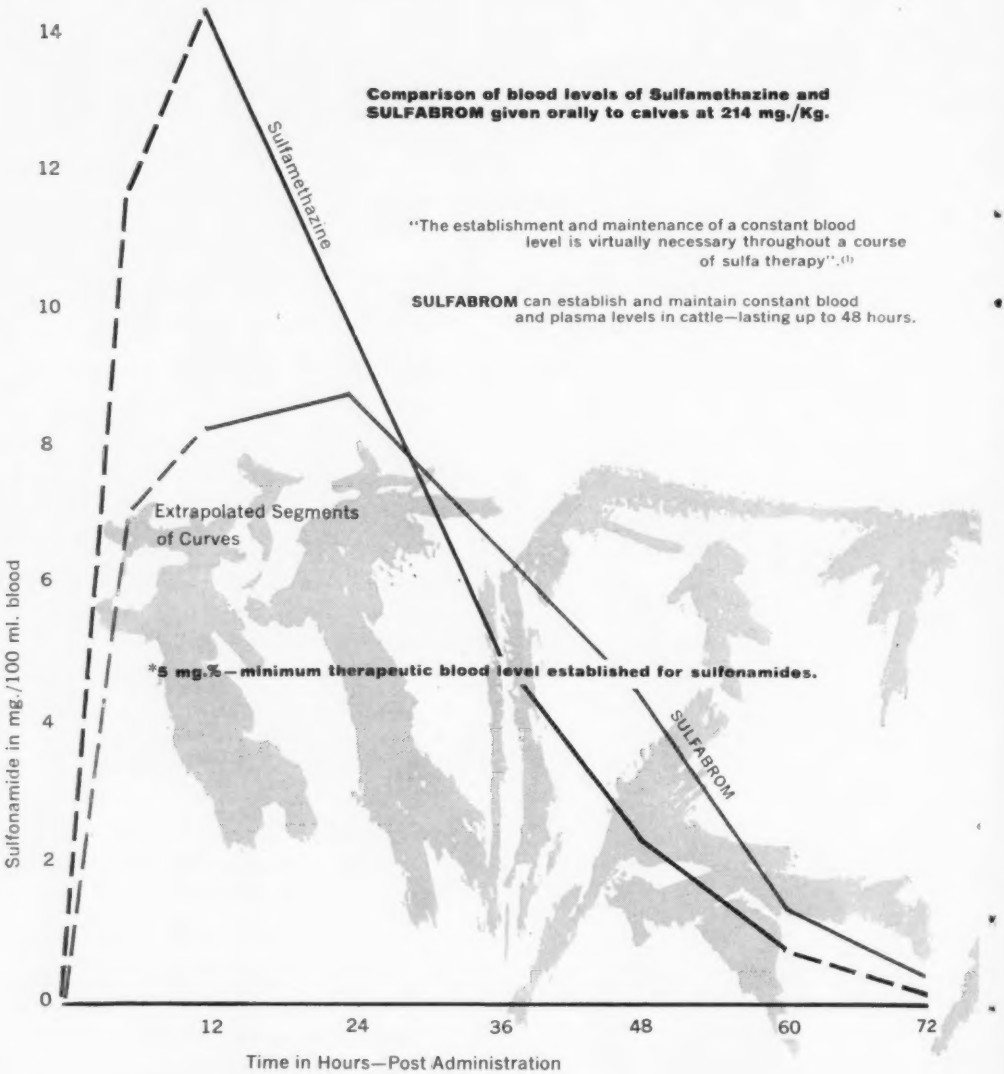
*Available from your professional veterinary distributor*

NITROFURANS—a *unique* class of antimicrobials—neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK

16

# The answer to the "constant-level"* concept of sulfa ther




**Comparison of blood levels of Sulfamethazine and SULFABROM given orally to calves at 214 mg./Kg.**

"The establishment and maintenance of a constant blood level is virtually necessary throughout a course of sulfa therapy".(1)

**SULFABROM** can establish and maintain constant blood and plasma levels in cattle—lasting up to 48 hours.

***5 mg.%—minimum therapeutic blood level established for sulfonamides.**

(1) Stowe, C.M. et al.: Am. J. Vet. Res. **19**:345 (April) 1958.

**one oral dose of**

# apy...SULFABROM®

## can provide therapeutic blood and plasma levels in cattle lasting up to 48 hours.

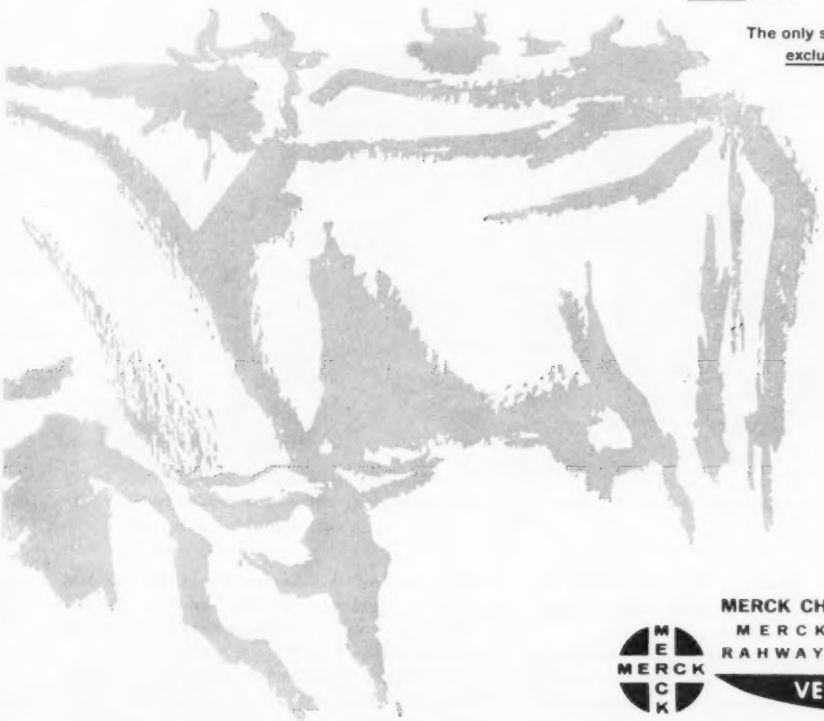
**effective in the treatment of:** pneumonia • shipping fever • foot rot • metritis • coccidiosis (oral treatment) • calf diphtheria • acute septic mastitis • traumatic gastritis (postoperative) • infected wounds • winter dysentery • peritonitis • listeriosis • and calf scours.

**SUPPLIED AS:** No. 55671 SULFABROM Buffered Powder 1-lb. bottles. No. 55601 SULFABROM 15 Gm. Boluses—packages of 5 and 50. No. 55591 SULFABROM 4 Gm. Boluses—packages of 5 and 50.

**DOSAGE** (in cattle): **SULFABROM Boluses**—60-90 mg. (1.0-1.5 grains)/lb. of body weight, orally for sustained levels.

**SULFABROM Buffered Powder**—15-30 mg. (0.25-0.5 grains)/lb. intravenously—for immediate levels. 30-60 mg. (0.5-1.0 grains)/lb. intraperitoneally—for rapid, sustained levels. 60-90 mg. (1.0-1.5 grains)/lb. orally, as a drench—for convenient levels.

The only sulfa product available exclusively to veterinarians



MERCK CHEMICAL DIVISION
MERCK & CO., INC.
RAHWAY, NEW JERSEY

MERCK VETERINARY

®TRADEMARK OF MERCK & CO., INC. FOR SODIUM SULFABROMOMETHAZINE

J. F. Smithcors, D.V.M., Ph.D.

## History of AVMA

**1880**

The meetings for 1880 were held—as usual—in Boston and New York. Fifteen new members, including the stormy petrel, Frank S. Billings, were admitted. Papers were read on chloral hydrate anesthesia, by C. H. Peabody; on veterinary education, and on osteosarcoma, by A. Liautard; and on alcohol and belladonna in treatment of tetanus, by T. Outerbridge of Bermuda: Lachlan McLean presented specimens of shoes used in treatment of spavin, and the subjects of tenotomy, embolism and soundness were discussed.

Dr. Liautard noted that the *Review* was free of debt and was increasing in circulation. The propriety of paying an honorarium not to exceed $25 for original articles was left to the Boards of Trustees and Faculty, be urged to increase their requirements for matriculation, to lengthen the course of studies, and to have a board of examiners, taken from the regular graduates through the country, to act with the Faculty at the examination for graduation." Under these conditions, the candidate's diploma would serve as a voucher for admission to the Association. Although (according to Liautard) "several of the members . . . . expressed their hearty approval of the suggestions . . . . the report of the committee was accepted and placed on file," without action taken.

J. L. Robertson was re-elected president and Charles Burden, treasurer; O. H. Flagg and C. B. Michener were elected vice president and secretary, respectively.



Scene at the American Veterinary College about 1880, site of many annual meetings of the USVMA.

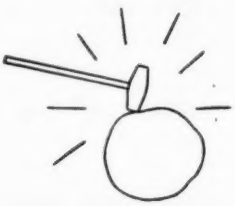
editor. Liautard tendered his resignation as editor, as he had twice previously, but the matter was tabled.

As chairman of the Committee on Education, Liautard moved that his earlier motion calling for an examination of candidates for membership be rescinded, and: "that the different veterinary schools of the country, through their

The pages of the *Review* for 1880 contain interesting sidelights on the role of Robert Jennings, Sr. in the establishment of veterinary education of the USVMA. In his history of veterinary science in America, Liautard had slighted Jennings' efforts on behalf of a national association, and gave credit to the New York College of Veterinary Surgeons as the

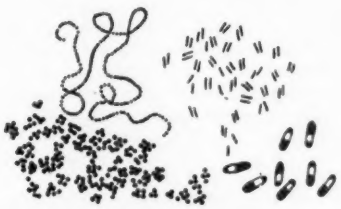
# Solves complex problem of OTITIS THERAPY

# TYMPACAINE



**INDESTRUCTIBLE SULFONAMIDE**

Mafenide Hydrochloride . . . potent sulfonamide *not inactivated* by pus, blood, cellular debris or PABA



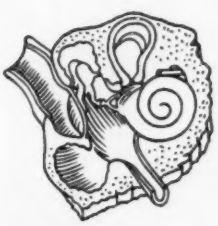
**WIDE-SPECTRUM SULFONAMIDE**

Highly effective against a wide range of pathogenic bacteria . . . *even problem pathogens* like Pseudomonas and Staphylococcus.



**PROLONGED TOPICAL ANESTHESIA**

Relief from pain is *quick, profound, prolonged* . . . benzocaine stops scratching and thus reduces the spread of infection . . . hastens healing.



**PENETRATING VEHICLE**

Propylene glycol is eleven times more penetrating than glycerin . . . carries medication to *every tiny crevice.* Urea encourages debridement.



TYMPACAINE Ear Drops Warren-Teed, ½ oz. plastic applicator bottles, cartons of 12 . . . detachable label for dispensing.

WARREN-TEED

*Veterinary Products*

Sold Only to Graduate Veterinarians

THE WARREN-TEED PRODUCTS COMPANY, DIVISION OF VETERINARY MEDICINE, COLUMBUS 8, OHIO

DALLAS • LOS ANGELES • PORTLAND • CHATTANOOGA

## Social Security—Reminder to the Self-Employed

Correct reporting of self-employed net earnings every year is important for Social Security purposes.

The Social Security Administration joins with the district director of internal revenue in reminding people who work for themselves—alone or in a partnership—that federal income tax returns for 1959 must be filed on or before April 15, 1960. This must be done and the self-employment tax paid if net earnings for the year were as much as $400, even if no income tax is payable. The tax on 1959 net earnings is 3.75 per cent of the first $4,800 of earnings. Beginning Jan. 1, 1960, the tax for the self-employed is increased to 4.5 per cent of the first $4,800 of earnings.

Net earnings are reported on a separate Schedule C with the federal income tax return. The earnings to be reported for the self-employment tax are the net earnings from your trade or business or profession and do not include income from dividends, rentals from real estate, or income from other types of investments. Additional information about reporting self-employment income may be secured from the local office of the director of internal revenue.

Many people do not realize that failure to make a yearly report is a violation of the law and can result in penalties and interest charges on unpaid social security taxes. Many more do not understand that delay in filing can cause loss of valuable social security credit and so cut down their old-age, survivors, and disability insurance protection. If you are a self-employed person, guard against the possibility of this happening to you. Report your net earnings correctly and regularly year after year. For information about old-age, survivors, and disability insurance, contact your nearest social security office.

## Search Begins for Cause of False Tuberculosis Reactors

Wisconsin will finance an $18,000 research study of the present tuberculosis test prescribed by the federal government. The University of Wisconsin will study the possibility of test reaction in cattle to diseases or factors other than tuberculosis. Soils and feeds will be evaluated as possible false reaction-producing sources. Since many cattle reacting to the test have shown no visible signs of tuberculosis after slaughter, it is feared that dairymen may be suffering needless and serious losses.—*Wisconsin Agric., 86, (Nov. 21, 1959): 10.*




**STAINLESS STEEL SANI-CAGES ARE A "ONCE IN A LIFETIME" INVESTMENT!**

K-9 Sani-Cages are constructed from a surgical instrument quality of stainless steel that will provide a lifetime of service—you only have to buy them once—not every 5 or 10 years as with cages of inferior materials. They are easier to keep clean and antiseptic than any other cages on the market. The first Sani-Cages installed years ago still look new. Every Sani-Cage is guaranteed in writing for the life of your practice. Progressive veterinarians all over the U. S. use Sani-Cages. Installation shown is in the attractive, efficient small animal hospital of Dr. Willard M. Pounds, Metairie, La.

**Write for new K-9 Veterinary Catalog!**

Sani-Cage MANUFACTURING CO.
6815 STONY ISLAND AVE., CHICAGO 49, ILL.

first functional school in the U. S. In a letter to the editors of the *Veterinarian* (London), Jennings, Jr. said, "My father, Robert Jennings, was the first to publicly advocate the cause of veterinary science in this country." Concerning the Veterinary College of Philadelphia (1852), "This, the first veterinary college chartered in America, the date fully proves." He also quotes letters from prominent veterinarians in early 1863 to support his contention that "at a meeting of veterinary surgeons lately held in Philadelphia, it was proposed to form a National Veterinary Association."

The facts, however, are elusive and Jennings' efforts were practically fruitless. Furthermore, it can be argued that Benjamin Rush was the first to publicly advocate veterinary education (1807), and that the Boston Veterinary Institute was incorporated in 1849. And despite the short life of the latter, it did exert more influence on the course of veterinary science in America than did the Philadelphia institution. While Jennings should be credited with calling the original meeting of the USVMA, it is also a fact that most of the Pennsylvania delegation walked out without signing the constitution. The full truth could be adduced only after extensive investigation, but from the available contemporary documents it seems that the efforts of Jennings had been primarily on behalf of his ill-fated college, rather than for a national association.

✦ ✦ ✦

FRANK S. BILLINGS, long the gadfly of the American veterinary profession, obtained his veterinary degree at Berlin in 1878. He was well known for his frequently caustic contributions to the *American Veterinary Review* before joining the USVMA in 1880. Associated with the American, Chicago and McGill schools at various time, he achieved his greatest notoriety while at the University of Nebraska, where he claimed to have found the infective agents of hog cholera and Texas fever. In announcing his untenable claims, he vehemently disputed the classic work of the BAI, and forced Dr. Salmon into an extended and needless defense of the Bureau.

In 1890 Billings was expelled from the USVMA for his ungentlemanly attacks upon the veterinary profession in general and Dr. Salmon in particular. He retired to practice in his native Massachusetts in 1892, but continued his warfare with the BAI and the USVMA, practically until his death in 1912 at the age of 68.

Map prepared by Dr. C. P. Lyman, showing the extent of bovine pleuropneumonia about 1880



# ANNOUNCING



## NOnemic

**THE NEW, HIGHER POTENCY IRON-DEXTRAN FOR THE PREVENTION OF**

## BABY PIG ANEMIA

**NOnemic** contains 75 mg. of completely absorbable iron-dextran per cc.—150 mg. per 2 cc. dose.

**NOnemic** gives fullest protection from a single injection—no "anemic dip" in hemoglobin levels at 3 weeks of age.

**NOnemic** **FOR PROFESSIONAL USE ONLY** will be reserved exclusively for professional distribution.

ARMOUR PHARMACEUTICAL COMPANY ARMOUR VETERINARY DEPARTMENT KANKAKEE, ILLINOIS

# ARMOUR PITUITARY HORMONE PREPARATIONS FOR VETERINARY USE

## FSH-p

*Purified Pituitary Follicle Stimulating Hormone*



For treatment of genital infantilism, gonadal regression, incomplete follicular development, persistent luteal cysts, aspermia. Vials of 50 mg. (lyophilized).

## P.L.H.®

*Pituitary Luteinizing Hormone*



Used to effect prompt ovulation, treatment of follicular cysts. Preferred treatment of aberrant estrus due to luteal cysts. *In the male*, promotes production and release of the male hormone. Vials of 5 cc. (lyophilized) packaged with 5 cc. vial P.L.H. diluent.

## P.O.P.®

*Purified Oxytocic Principle*



To precipitate labor and accelerate normal parturition; for dystocia due to uterine inertia; promotes uterine contraction when desired; stimulates milk letdown. Vials of 10 cc. and 30 cc. (20 U.S.P. Units per cc.).

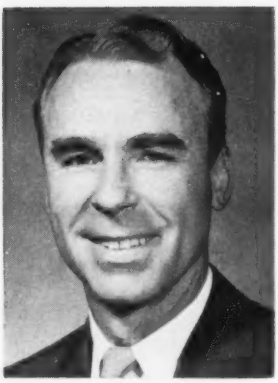
© 1960, A. P. Co.

SOLD ONLY TO LICENSED VETERINARIANS

VETERINARY DEPARTMENT
ARMOUR PHARMACEUTICAL COMPANY
KANKAKEE, ILLINOIS

ARMOUR®

## Dr. C. E. Hofmann Succeeds Dr. W. F. Irwin on AVMA Executive Board



Dr. C. Edwin Hofmann

Dr. C. Edwin Hofmann (KSU '40), Tulsa, Okla., was elected to the AVMA Executive Board, representing District VII (Kansas, Missouri, and Oklahoma), in January, 1960.

He succeeds Dr. William F. Irwin who died on Sept. 10, 1959, due to injuries he received in an airplane accident (*see* the JOURNAL, Oct. 15, 1959, p. 447).

Dr. Hofmann was born and reared in Manhattan, Kan. After graduation from Kansas State, he participated in the disease control work of the North Carolina Department of Agriculture for two years. From 1942 to 1944, he conducted a private practice in Suffolk, Va. He moved to Tulsa in 1944.

Active in local, state, and national veterinary associations, Dr. Hofmann is a past president of the Tulsa Association of Small Animal Veterinarians, the Tulsa V.M.A., the Oklahoma V.M.A., and the Midwest Small Animal Association. In addition, he is a member of the American Animal Hospital Association.

---

## Practice Hazards Studied

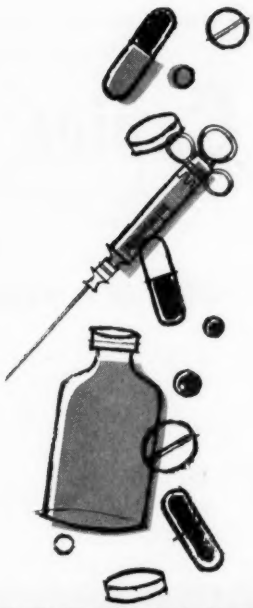
To reduce on-the-job accidents involving veterinarians, a program of research has been initiated by the AVMA Group Insurance Trust. Dr. T. Lloyd Jones, D.V.M., is chairman of the subcommittee on occupational claims.

Since the Insurance Trust was started in 1957, more than 300 veterinarians have reported occupational accidents. These reports are being analyzed by a special research consultant.

Further research will concern safety education and practices now being carried on by and for veterinarians in universities and in the community.

Dr. Jones anticipates that the research will be the basis of a long-range program that will lead to fewer accidents for veterinarians engaged in practice.

He indicated that the reduction of on-the-job accidents will not be accomplished overnight. With the detailed data on hand and to be collected, there will be available to the veterinary profession, for the first time, the information needed to pinpoint critical accident areas for veterinarians. Over the next few years, the collection of more detailed accident information will provide facts upon which a meaningful program can be based.



# HIGHEST VALUE

## ...LOWEST COST



*Pharmaceuticals, anti-biotics and biologicals formulated and manufactured under highest quality controls in our new, modern manufacturing facilities*

PENICILLIN • STREPTOMYCIN • DIHYDROSTREPTOMYCIN • VITAMINS • STEROIDS — IN INJECTABLES, TABLETS AND OINTMENTS



**Bio-Ramo**

SERVING THE MEDICAL AND VETERINARY PROFESSIONS

*Bio-Ramo Drug Co., Inc.*
*Baltimore 1, Maryland*

# Bind Your Copies

of the

*JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION*

and

*AMERICAN JOURNAL OF VETERINARY RESEARCH*

The publishers have effected an arrangement with one of America's foremost bookbinders by which subscribers can have their journals economically bound, to the publisher's specifications.

Your copies of the JOURNAL of the American Veterinary Medical Association will be bound in the finest grade black washable buckram, with your name imprinted on the front cover. Price $4.45.

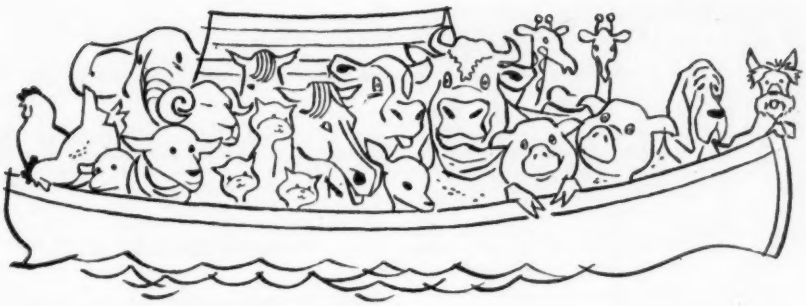
*Ship journals parcel post. Bound volumes will be returned transportation prepaid. Full remittance must accompany order.*

## The Book Shop Bindery

**Publisher's Authorized Binding Service**

**Creators of Distinctive Bindings**
**Since 1895**

**5809 W. Division St., Chicago 51, Illinois**



# Rapid Bactericidal Action in All Species

The synergism of Neomycin and Polymyxin B extends the bactericidal action well beyond the limits of either antibiotic. The broad spectrum of effectiveness has been reported authoritatively in numerous published clinical studies.[1,2,3]

Because Daribiotic is bactericidal, resistant organisms have little opportunity to develop. Convenient dosage forms for the treatment of small and large animals broaden the usefulness of Daribiotic.

## DARIBIOTIC®

NEOMYCIN-POLYMYXIN B*

***IN PRACTICAL DOSAGE FORMS***

**DARIBIOTIC** Injectable—for prompt treatment of bacterial infections.
**DARIBIOTIC** Mastitis Infusion—in 7.5-cc. tubes and 100-cc. vials.
**DARIBIOTIC-AH**—12-cc. disposable syringe for mastitis infusion.
**DARIBIOTIC** Tablets—for control of intestinal infections.
**DARIBIOTIC** Soluble—convenient oral administration in liquids for intestinal infections.

*U.S. Patent No. 2,565,057


1. Barr, F.S., Carman, P.E. and Harris, J.R.: Synergism and Antagonism in Antibiotic Combinations; Antibiotics and Chemotherapy; 4:818 (1954).
2. Baker, W.L.: Clinical Use of Injectable Neomycin and Polymyxin B; Veterinary Medicine, 53 (1958): 275.
3. Barr, F.S., Harris, J.R. and Carman, P.E.: Intramuscular Treatment of Staphylococcic Mastitis with Neomycin Sulfate and Polymyxin B Sulfate; J.A.V.M.A., 132 (1958): 110.


*Write for literature and reprints*

THE S. E. MASSENGILL COMPANY
VETERINARY DIVISION
Bristol, Tennessee

# COMING MEETINGS

**Notices of coming meetings must be received 30 days before date of publication.**

Missouri Veterinary Medical Association. Sixty-eighth annual meeting. Hotel President, Kansas City, Mo., Feb. 21-23, 1960. Paul L. Spencer, P.O. Box 283, Jefferson City, Mo., secretary-treasurer.

West Virginia Veterinary Medical Association. Winter meeting. Greenbriar Hotel, White Sulphur Springs, Feb. 28-29, 1960. Harry J. Fallon, 200 Fifth St., West Huntington, W. Va., secretary.

Indiana Veterinary Medical Association and Vita Vet Laboratories. Third symposium on therapeutic nutrition. State Board of Health Building, Indianapolis, March 4, 1960. E. E. Slatter, Box 108, Marion, Ind., chairman.

New Jersey Veterinary Medical Association. Seventy-sixth annual meeting. Hotel Claridge, Atlantic City, March 30-31, 1960. John R. McCoy, 236 Highway 18, East Brunswick, N. J., secretary.

Alabama Veterinary Medical Association. Annual meeting. Battle House, Mobile, April 3-5, 1960. M. K. Heath, School Veterinary Medicine, Auburn University, Auburn, Ala., secretary.

Florida, University of. Third annual conference for veterinarians. University of Florida, Health Center Auditorium, April 30—May 1, 1960. W. R. Pritchard, Head, Department of Veterinary Science, University of Florida, Gainesville.

Kansas State University. Twenty-second annual conference. School of Veterinary Medicine, Kansas State University, Manhattan, May 19-21, 1960. Donald C. Kelley, chairman.

American Veterinary Medical Association. Ninety-seventh annual meeting. Denver-Hilton Hotel, Denver, Colo., Aug. 15-18, 1960. H. E. Kingman, Jr., 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

## Foreign Meetings

International Association of Veterinary Food Hygenists. Second Symposium. Basel, Switzerland, May 15-21, 1960. Dr. A. Clarenburg, 1, Sterrenbos, Utrecht, The Netherlands, president.

Fourth International Congress on Animal Reproduction. The Hague, Netherlands, June 5-9, 1961. For additional information contact: the Secretariat of the Fourth International Congress on Animal Reproduction, 14, Burgemeester de Monchyplein, The Hague, Netherlands, Dr. L. Hoedemaker, secretary to the organizing committee.

Eighth International Congress of Animal Husbandry. Hamburg, Germany, June 13, 1961.

International Congress of Physio-Pathology of Animal Reproduction and Artificial Insemination, Amsterdam, Netherlands, June 13-17, 1960. Dr. J. Edwards, Milk Marketing Board, Thames, Surrey, England.




HISTACOUNT®
PRINTING • PATIENTS' RECORDS
AMERICA'S LARGEST PRINTERS TO THE PROFESSIONS
PROFESSIONAL PRINTING COMPANY, INC.
NEW HYDE PARK, N. Y.


First International Congress of Endocrinology. Technical University of Denmark, Copenhagen, July 18-23, 1960. Dr. Christian Hamburger, Statens Seruminstitut, Copenhagen S, Denmark, chairman of the executive committee.

## Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Medical Association, the first Thursday of each month. James L. Chambers, 4307 Normanbridge Rd., Montgomery, Ala., secretary-treasurer.

Jefferson County Veterinary Medical Association, the second Thursday of each month. Dan P. Griswold, Jr., 714 S. 39th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the third Tuesday of each month. Cecil S. Yarbrough, 4121 U.S. 90 West, Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, P.O. Box 1767, Decatur, Ala., secretary.

Northeast Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ALASKA—Anchorage Group of the Alaska V. M. A., the last Wednesday of each month at Fort Richardson Officers' Club or Thompson's Restaurant, 6th and I Streets, Anchorage, Alaska. Lt. Colonel E. H. Akins, Surgeon's Office, USARAL, Fort Richardson, Alaska, secretary to the Alaska V. M. A.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. John D. Clark, 518 West Oak St., Scottsdale, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. Gwyn Chapin, 2215 E. Calle Vista, Tuscon, Ariz., secretary.

ARKANSAS—Pulaski County Veterinary Medical Society, the second Tuesday of each month. Harvie R. Ellis, 54 Belmont Drive, Little Rock, Ark., secretary-treasurer.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of every month. L. M. Proctor, 24 Meadow Lane, Concord, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16th St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Paul S. Chaffee, 2333 McKinley Ave., Fresno, Calif., secretary.

Humboldt-Del Norte Counties Veterinary Medical Association, the second Tuesday of January, May, September, and November. Dr. M. Lunstra, P. O. Box 734, Eureka, Calif., secretary-treasurer.

Kern County Veterinary Medical Association, the first Thursday evening of the month. Francis Dawson, 2007 Nile St., Bakersfield, Calif., secretary-treasurer.

Mid-Coast Veterinary Medical Association, the first Thursday of each month. William P. Matulich, P. O. Box 121, San Luis Obispo, Calif., secretary-treasurer.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. V. Todorovic, 47 Mann Ave., Watsonville, Calif., secretary.

Northern California Association of Veterinarians, the second Tuesday of the month. George Crenshaw, 1137 8th St., Orland, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell in Modesto, Calif. Kenneth E. Erwin, Box 841, Manteca, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. K. R. Wilcox, P.O. Box 98, Upland, California, secretary-treasurer.

Orange County Veterinary Medical Association, the third Thursday of each month. H. M. Stanton, 1122 S.E. U.S. Highway 101, Tustin, Calif., secretary.

Peninsula Veterinary Medical Association, the third Tuesday of the month. Arthur L. Gilger, 2905 South El Camino Real, San Mateo, Calif., secretary-treasurer.

Redwood Empire Veterinary Medical Association, the third Thursday of the month. R. R. Rediske, 833 Vallejo Ave., Novato, Calif., secretary-treasurer.

Sacramento Valley Veterinary Medical Association, the second Thursday of each month with the location specified monthly. Eugene C. Story, 4819 "V" St., Sacramento 17, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of the month. Robert F. Burns, 7572 North Ave., Lemon Grove, Calif., secretary-treasurer.

San Fernando Valley Chapter SCVMA, the second Tuesday of each month at 7:30 p.m., Hody's Restaurant, North Hollywood, Calif. Barbara G. Shirley, Canoga Park, Calif., secretary-treasurer.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, Calif., secretary.

San Francisco Veterinarians, every other month—meetings decided at previous sessions. J. Wachs, 317D Sacramento St., San Francisco, Calif., secretary-treasurer.

Santa Barbara-Ventura Counties Veterinary Medical Association, every three months, no set date. Gerald M. Clark, 5415 8th St., Carpinteria, Calif., secretary-treasurer.

Santa Clara Valley Veterinary Medical Association, the last Tuesday of the month. Robert L. King, 1269 Grant St., Santa Clara, Calif., secretary-treasurer.

Southern California Veterinary Medical Association, the third Wednesday of the month. Mr. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinary Medical Association, the second Thursday of each month at the Tagus Ranch, Tulare. Larry A. Jackson, 12191 Lacey Blvd., Hanford, Calif., secretary-treasurer.

COLORADO—Denver Area Veterinary Medical Society, the fourth Tuesday of every month. Gene M. Bierhaus, 2896 S. Federal Blvd., Englewood, Colo., secretary-treasurer.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, in Fort Collins. E. J. Carroll, Dept. of Clinics and Surgery, Colorado State University, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Medical Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. A. P. Mayer, Jr., R.F.D. 2, Newark, Del., secretary-treasurer.





WW CATTLE CHUTE

This fine Chute has a fool-proof, automatic head adjuster. It adjusts to any size animal. Ideal for removing horns, branding, milking, or any veterinary operation. Length 7 feet, weight 980 lbs.

THE ORIGINAL SIDE EXIT CHUTES are made for either right or left side operation. Only one man is necessary to handle the complete operation. Adjustable squeeze gate sets the chute right for any size animal.

Chutes may be had either PORTABLE or Stationary. Chute trails easily behind vehicle. One man can mount or dismount wheels in one to two minutes. Hitch and wheel attachments can be completely removed – can be remounted ready for trailing in less than 3 minutes.

SPECIAL PRICES TO VETERINARIES

WW MANUFACTURING COMPANY DODGE CITY, KANSAS BOX 728

DODGE CITY, KANSAS
BOX 728 AV

Please send complete literature and special price information to veterinaries.

NAME_____

ADDRESS_____

CITY_____ STATE_____

DISTRICT OF COLUMBIA—District of Columbia Veterinary Medical Association, the second Tuesday evenings of January, March, May, and October. R. B. Gochenour, 10109 Ashwood Dr., Kensington, Md., secretary-treasurer.

FLORIDA—Big Bend Veterinary Medical Association, meets the first Sunday of each month at 5:00 p.m. at the Tallahassee Dining Room, Tallahassee. Mrs. Robert E. Lee, P.O. Box 3236, Tallahassee, Fla., acting secretary.

Central Florida Veterinary Medical Association, the first Friday of each month at 8:00 p.m.; place specified monthly. William L. Sippel, P.O. Box 847, Kissimmee, Fla., secretary.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, St. Petersburg. S. H. Carr, P.O. Box 1206, Dunedin, Fla., secretary.

Hillsborough Veterinary Medical Society, the second Monday of every month; time and place are specified monthly. J. H. Rogers, 311 N. Ben Avon Dr., Tampa, Fla., secretary-treasurer.

Jacksonville Veterinary Medical Association, the first Thursday of every month at the Green Turtle Restaurant, at 8:00 p. m. Edwin G. Clampett, 5150 Love Grove Rd., Jacksonville 7, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month; time and place specified monthly.; David B. Aronson 923 Belair Road, Pensacola, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday evening of each month. McArthur Dairy Building, Four Points, W. Palm Beach. D. L. Lichty, 700 Hollywood Place, West Palm Beach, Fla., secretary.

Pinellas County Veterinary Society, the first Monday of January, February, April, May, July, August, October, and November at the Fort Harrison Hotel, Clearwater, Fla., at 7:30 p.m. L. H. Sellers, Jr., 3813 Tyrone Blvd., St. Petersburg, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. John S. Haromy, Route #1, Box 107-A, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month; time and place specified monthly. E. J. Gissendanner, 1665 N.E. 123rd St., North Miami, Fla., secretary.

Suwannee Valley Veterinary Medical Association, meets each fourth month; time and place specified quarterly. G. L. Burch, P.O. Box 405, Ocala, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. Robert E. Cope, 127 E. Mason, Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Medical Society, the third Thursday of each month at the Elk's Home, 726 Peachtree St., Atlanta. Richard Montgomery, P.O. Box 222, Morrow, Ga., secretary-treasurer.

East Georgia Veterinary Medical Association, quarterly, date and meeting place varies. Hugh F. Arundel, P.O. Box 153, Statesboro, Ga., secretary.

Georgia-Carolina Veterinary Medical Association, the second Monday of each month at 8:00 p.m., at the Town Tavern, Augusta, Ga. James M. Hawk, 700 E. Buena Vista Ave., North Augusta, S. C., secretary.

North Georgia Veterinary Medical Association, quarterly, no set date, the spring meeting at the Veterinary School, Athens, Ga. S. J. Shirley, Commerce, Ga., secretary.

South Georgia Veterinary Medical Association, the second Sunday of each quarter at 3:30 p.m., at the Radium Springs Hotel, Albany, Ga. M. W. Hale, Route 2, Tifton, Ga., secretary.

ILLINOIS—Central Illinois Veterinary Medical Association, June 9, Sept. 9, and Dec. 10, 1959. Howard Bennett, 120 W. Jefferson St., Petersburg, Ill., secretary-treasurer.

Chicago Veterinary Medical Association, the second Tuesday of each month, Charles H. Armstrong, 1021 Davis St., Evanston, secretary.

INDIANA—Calumet Area Veterinary Medical Association, the first Thursday of each month. Bruce Sharp, Box 166, Hobart, Ind., secretary-treasurer.

Central Indiana Veterinary Medical Association, the second Wednesday of each month. P. T. Parker, 224 N. Mill St., Plainfield, Ind., secretary-treasurer.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. Stanton Williamson, 217 W. Chippewa St., South Bend, Ind., secretary.

Northwestern Indiana Veterinary Medical Association, the fourth Thursday of each month, except August, January, and February. Harvey R. Smith, R.R. 2, Box 30, Lowell, Ind., secretary-treasurer.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P.O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. E. L. Koch, Plainfield, Iowa, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month except June, July, and August at 6:30 p.m., Breeze House, Ankeny, Iowa. S. L. Hendricks, secretary-treasurer.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at Bradford Hotel, Storm Lake, at 7:30 p.m. V. R. Howie, Manson, Iowa, secretary.

East Central Iowa Veterinary Medical Association, the third Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. T. F. Bartley, P.O. Box 454, Cedar Rapids, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. M. F. Frevert, West Union, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

*NEW*

**THE URINE OF THE DOG AND CAT**

**ANALYSIS AND INTERPRETATION**

**by**

**FRANK BLOOM, D.V.M.**

**A concise practical book on urine analysis and its interpretation.**

**96 pages — $3.75**
**order from**

**GAMMA PUBLICATIONS, Inc.**
**P.O. Box 53, Gracie Station**
**NEW YORK 28, NEW YORK**

# RECOMMEND SPARINE FOR SHIPPING CATTLE



INJECTION

## Sparine® HYDROCHLORIDE

Promazine Hydrochloride, Wyeth

There are five reasons why you should recommend INJECTION SPARINE when a client mentions shipping cattle from range to feedlot.

1. INJECTION SPARINE reduces shipping-weight losses by over fifty per cent in most cases.
2. INJECTION SPARINE effectively controls the nervousness and unruliness of cattle resulting from loading, handling, and shipping.
3. When SPARINE-treated cattle arrive, they are calm and quiet. Uneasiness, usually evidenced by bawling, fence walking, and milling, is overcome—they go back on feed fast.
4. Even in transit, SPARINE-treated cattle remain steady on their feet without impairment of consciousness.
5. And above all, SPARINE is safe. No untoward reactions or blood dyscrasias have been reported following use of SPARINE in cattle.

SPARINE is also effective (and safe) in horses, swine, sheep, and small animals.

*WYETH LABORATORIES, Philadelphia 1, Pa.*

AVAILABLE: INJECTION: 50 mg. per cc., vials of 10, 30, and 100 cc.
TABLETS: 25, 50, 100 mg., vials of 50.

SUPPLIED ONLY TO THE PROFESSIONS

Comprehensive literature supplied upon request

100 ANNIVERSARY Wyeth®

**A Century of Service**

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Building, Sheldon. Warren Verploeg, Paulina, Iowa, secretary.

Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant. H. D. McCreedy, Ottumwa, Iowa, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October. Hotel Chieftain, Council Bluffs. F. S. Sharp, Red Oak, Iowa, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at All Vets Center, Clear Lake, at 7:00 p.m. Delmar Diercks, Rockwell, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. R. H. Folsom, P.O. Box 323, Danville, Ky., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday of each month in Louisville or within a radius of 50 miles, except January, May, and July. G. R. Comfort, 2102 Reynolds Lane, Louisville, Ky., secretary-treasurer.

LOUISIANA—New Orleans Veterinary Medical Association, the third Thursday of every month at the Monteleone Hotel, New Orleans, at 8:30 p.m. Ronald C. Francis, 6421 Chef Menteur Highway, New Orleans, La., secretary-treasurer.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Leonard D. Krinsky, 6111 Hartford Rd., Baltimore, Md., secretary.

MICHIGAN—Central Michigan Veterinary Medical Association, the first Wednesday of every month at 7 p.m. Jerry Fries, 2070 E. Main St., Owosso, Mich., secretary.

Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert W. Acton, 4110 Spring Rd., Jackson, Mich.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. Alvin R. Conquest, P.O. Box 514, Grand Blanc, Mich., secretary.

Southeastern Michigan Veterinary Medical Association, the fourth Wednesday of every month, September through May. Louis J. Rossoni, 24531 Princeton Ave., Dearborn 8, Mich., secretary.

MINNESOTA—Lake Region Veterinary Medical Association, quarterly meetings, with time and place specified prior to each meeting. J. A. Strache, Battle Lake, Minn., secretary-treasurer.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis Mo., at 8 p.m. Edwin E. Epstein, 4877 Natural Bridge Ave., St. Louis 15, Mo., secretary.

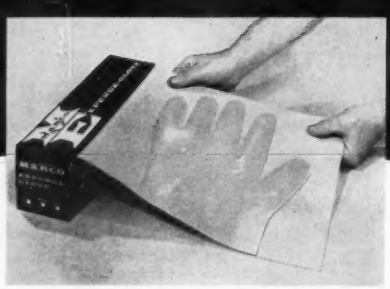
Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kan., secretary.

NEVADA—Western Nevada Veterinary Society, the first Tuesday of each month. Paul S. Silva, 1170 Airport Road, Reno, Nev., secretary.


MARCO

EXPENDA-GLOVES

the ideal one-use plastic gloves for veterinary use



Now . . . for the ultimate in veterinary procedures . . . disposable plastic gloves that offer all these advantages:

• **Clear, strong polyethylene**—a light, but durable plastic glove that provides high tactility.

• **Five fingers**—Each MARCO EXPENDA-GLOVE has five fingers. Avoid the clumsiness of putting two fingers into one slot. Gloves fit either hand.

• **Purified by ultra-violet**—Both the paper and the gloves themselves have been irradiated by ultra-violet for added sanitation. Untouched by human hands during manufacturing.

• **Packaged in a roll**—Always ready for use. Gloves may be used from their self-dispensing box, or roll may be inserted in any standard wall-type paper towel dispenser.

• **Three sizes**—Available in small, medium or large sizes.

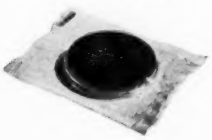
*For Free sample, write to*

THE MASSILLON RUBBER COMPANY • *Massillon, Ohio*

# Pre-Med®

(PREPARED MEDIUM)

the disposable culture plate
in a sterile bag*



It's ready to use—
just streak it



Modern time and work saver
in diagnosis of

## MASTITIS

Pre-Med culture plates are ready for immediate streaking with specimens from infected udders. Just open sterile outer bag, lift plastic cover, and streak agar with specimen. Read when incubation is complete—then destroy.

There are many other uses, too, for these versatile ready-to-use culture plates. An infected wound? A fungus infection? With Pre-Med culture plates in your bag, you are always ready to culture fresh specimens—no matter how many miles you may be from your laboratory. Even perishable specimens become routine to handle.

Once you use this unique diagnostic aid you will always want a good supply in your refrigerator and several in your bag when you go out on calls. Plates remain usable for months under normal refrigeration.

Available media

*for routine bacteriology:*

Blood Agar — MacConkey Agar
Desoxycholate Citrate Agar
E.M.B. Agar — Chocolate Agar
Nutrient Agar

*for routine mycology:*

Sabouraud Dextrose Agar
Mycosel Agar
Littman Oxgall Agar

*(other media on request)*

Sold in units of 3 plates (minimum order) at 50 cents per plate. Lower cost in quantity. Available through your veterinary supply dealer or direct.

Hyland

HYLAND LABORATORIES
4501 Colorado Blvd.
Los Angeles 39, Calif.

*U.S. PATENT NO. 2,874,091

42—2




NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, R.D. 1, Box 284A, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April, except December, at the Irvington House, 925 Springfield Ave., Irvington, N.J. Bernard M. Weiner, 787 Clinton Ave., Newark, N.J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Elks Club, Hackensack. James R. Tanzola, Upper Saddle River, N.J., secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. L. Smith, P.O. Box 938, Trenton, N.J., secretary.

Southern New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collmont Diner, Collingswood, N.J. Jay Simmons, 247 South White Horse Pike, Audubon, N. J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, the third Wednesday of each month, Fez Club, Albuquerque. Donald W. Fitzgerald, 1825 Lomas Blvd., N.E., Albuquerque, N.M., secretary-treasurer.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 24 Warwick Ave., Scarsdale, N.Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. W. A. Sumner, 3741 High Point Rd., Greensboro, N.C., secretary.

Eastern North Carolina Veterinary Medical Association, the last Tuesday evening of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary-treasurer.

Piedmont Veterinary Medical Association, the last Friday of each month. J. G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Friday of each month at Orange Bowl Restaurant-Rockingham, N. Car., at 7:30 p.m. J. E. Currie, 690 N. Leak St., Southern Pines, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the third Thursday of every month at 7:00 p.m. in the George Vanderbilt Hotel, Asheville, N. Car. H. A. Justus, 924 Lakeside Dr., Hendersonville, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Rd., Ronald A. Meeks, 11081 Springfield Pike, Cincinnati 15, Ohio, secretary.

Clark County Veterinary Medical Association, meetings held quarterly; time and place irregular. R. Edmondson, South Charleston, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, the third Thursday of every month, September through May; place irregular. R. W. Vesper, 1481 Doten Ave., Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April, and May, at 9:00 p.m., at the Carter Hotel, Cleveland, Ohio. R. W. Stockstill, 6545 Mayfield Rd., Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month; place irregular. William Pumpelly, 6801 Airway Rd., Dayton, Ohio, secretary-treasurer.

Fifth District Veterinary Medical Association, meetings held quarterly; time and place irregular. E. J. Kersting, 115 Sheffield Rd., Columbus, Ohio, secretary.

Geauga County Veterinary Medical Society, the third Wednesday of each month, at the Manor House, Newberry, Ohio, at 1:00 p.m. Peter J. Clemens, Jr., R. D. 2, Chagrin Falls, Ohio, secretary.

Kilbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginnig with February; place irregular. Charles Gale, Ohio Agricultural Experiment Station, Wooster, Ohio, secretary-treasurer.

Knox County Veterinary Medical Association, meetings irregular. F. O. Haberman, Centerburg, Ohio, president.

Lorain County Veterinary Medical Association the second Wednesday of April, June, October, December, and February; place irregular. G. W. Bunyan, 37200 Detroit Rd., Avon, Ohio, secretary-treasurer.

Madison County Veterinary Medical Association, quarterly; date and place irregular. James Herman, Mechanicsburg, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the fourth Tuesday of each month, at 9:00 p.m. Youngstown Maennerchor Club, Youngstown, Ohio. Robert Edwards, 25 Oriole Dr., Youngstown, Ohio.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

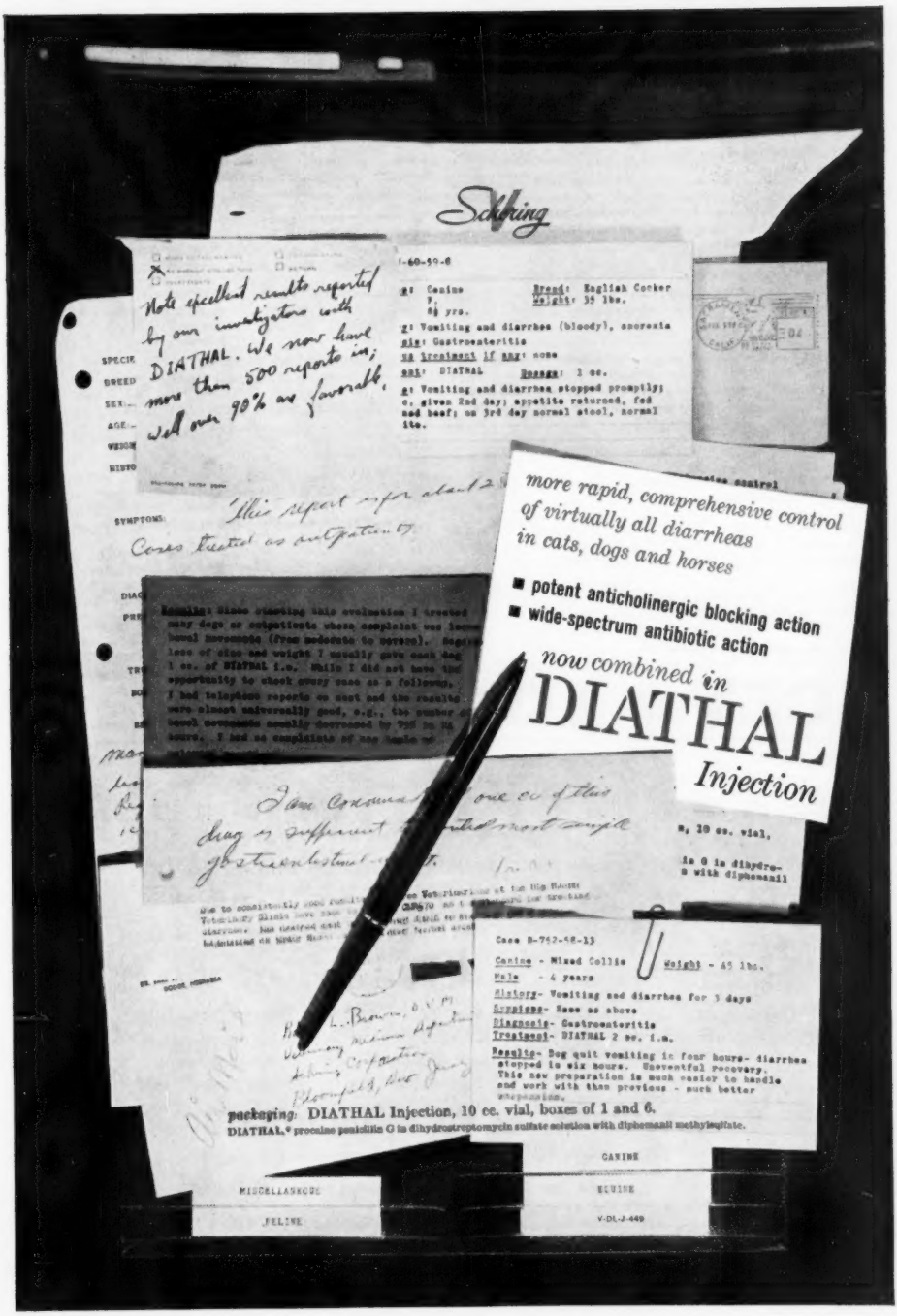
Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, 1683 W. Bancroft St., Toledo, Ohio, secretary-treasurer.

Southeastern Ohio Academy of Veterinary Medicine, every other month; time and place irregular. M. S. Phillips, Athens, Ohio, secretary.

Southern Ohio Veterinary Medical Association, meetings held quarterly at Wilmington; time irregular, S. E. Peterson, 1093 Rombach Ave., Wilmington, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, 42 W. Market St., Akron, Ohio, secretary-treasurer.


Schering
Note spelled results reported by our investigators with DIATHAL. We now have more than 500 reports in; well over 90% are favorable.
more rapid, comprehensive control of virtually all diarrheas in cats, dogs and horses
■ potent anticholinergic blocking action
■ wide-spectrum antibiotic action
now combined in
DIATHAL
Injection
packaging: DIATHAL Injection, 10 cc. vial, boxes of 1 and 6.
DIATHAL,® procaine penicillin G in dihydrostreptomycin sulfate solution with diphemanil methylsulfate.
CANINE
EQUINE
V-DL-J-449

Toledo Veterinary Medical Association, every other month; date and place irregular. F. C. Hartman, 3904 Rushland Ave., Toledo, Ohio, corresponding secretary.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. Fred Gunther, Springboro, Ohio, secretary.

Trumbull County Veterinary Medical Association, meet three or four times a year; time and place irregular. R. A. Hanawalt, P.O. Box 117, Kinsman, Ohio, secretary-treasurer.

West Central Veterinary Medical Association, third Thursday of February, June, September, and November, at the Lima Club, Lima. K. R. Heidt, 1055 Spencerville Rd., Lima, Ohio, secretary-treasurer.

Wheeling Valley Veterinary Medical Association, meetings held quarterly; time and place irregular. Earl Weaver, 1406 S. Zane Rd., Martins Ferry, Ohio, vice-president.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Claude A. Tigert, 3032 N.W. 68th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month at the City-County Health Building, 4616 E. 15th St., Tulsa, Okla. Arlen D. Hill, 5302 E. 11th St., Tulsa, Okla., secretary.

Tulsa Association of Small Animal Veterinarians, first and third Mondays. City-County Health Dept. R. H. Featherston, 3129 S. Winston, Tulsa 5, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m. Ireland's Restaurant, Lloyds, 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinary Medical Association, the third Tuesday of each month, except July and August, at the Marion Hotel, Salem. Robert J. Mallorie, P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine. Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. John W. Dantzler, 272 Wiles St., Orangeburg, S. C., secretary.

Georgia-Carolina Veterinary Medical Association—see GEORGIA.

TEXAS—Coastal Bend Veterinary Medical Association, the third Wednesday of each month, at 8:00 p.m.; place varies. Carl A. Keller, 6103 Highway 9, Corpus Christi, Texas, secretary-treasurer.

Dallas County Veterinary Medical Association, the first Tuesday of each month at 7:30 p.m., at a place to be specified. Frank N. Black, 12830 Preston Rd., Dallas, Texas, corresponding secretary.


# GET A LOAD OF THIS

**REFUND ON BIG RED DOG FOOD $1.00 REFUND ON BIG RED DOG FOOD**

DURING JANUARY AND FEBRUARY 1960, BIG RED WILL

GIVE

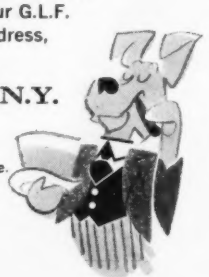
**$1.00 PER CASE (48-1 LB. CANS) ON ALL 3 BIG RED CANNED MEAT DOG FOODS**

(mixed cases, if you wish), and 50c PER CASE ON BIG RED RATION . . . Just send your receipt . . . before March 15 . . . (from your G.L.F. Store or other Big Red Dealer) showing your name, address, and amount purchased to:

**BIG RED, BOX 343, CANANDAIGUA, N.Y.**




BIG RED WILL SEND YOUR CHECK PROMPTLY!
Orders of 10 cases or more can be shipped direct from the plant . . . in which case the refund will be allowed on your invoice.



| BIG RED IN CANS | BIG RED IN BAGS |
|---|---|
| BEEF • HORSEMEAT | MEAL • PELLETS |
| CHICKEN • RATION | KIBBLED BISCUIT |

## Student Scientists Require Veterinary Supervision

Regulations for experiments with animals performed by students participating in science fair projects state that a trained biologist, scientist, physician, dentist, or veterinarian must directly supervise any experiment that involves anesthetic drugs or surgical procedure.

Experiments on living animals are limited to invertebrates, other nonmammals, and small animals such as mice, hamsters, guinea pigs, or rabbits. An exception to the above rule is in the case of farm animals, in which case the rules of the local 4-H Club shall be followed. No experiment shall be conducted that involves infection with pathogenic organisms or obviously mutilating surgical procedures, unless the animal is humanely disposed of at the end of the experiment. Any such experiment must be performed with the animal under appropriate anesthesia if pain is involved.—*Sci. News Letter (Sept. 5, 1959).*

## Tattooing for Identification

Tattooing has been used as a means of permanently identifying individual animals such as race horses, war dogs, and dogs and monkeys in research institutions.

Tattoo design consists of a permanent discoloration of the skin produced by a special ink with high carbon content. The ink is applied by rapidly vibrating needles penetrating the skin to a depth of approximately 1.5 mm. The procedure causes an inflammatory reaction which results in proliferation of epithelium which incorporates ink into the skin.

In horses, the tattoo site is located inside the upper lip. In dogs, the skin on the medial surface of the thigh is most satisfactory.

Legibility of the tattoo design is largely dependent on the skill of the operator since it is a free-hand operation; however, anyone with average dexterity can learn to produce a legible tattoo.

For best results, perform tattooing under anesthesia.—*W. I. Gay in Proc. Anim. Care Panel, 9, (June, 1959): 75.*


# An excellent opportunity in the commercial field

Long-established producer of ethical biologicals and pharmaceuticals offers an unusual career opportunity in the sales department of its Home Office. The opening is one for an ambitious, creative young man to administer and originate merchandising plans. A veterinarian, 25-35, who is presently successful in practice or in the commercial field is preferred, although applications are also invited from those without a veterinary medical degree, but with medical sales or advertising experience. Sales aptitude and writing ability are requisites, of course. Send complete resume of experience and qualifications, together with salary requirements, in confidence, to

**Box B 17, Journal of the A.V.M.A.**

UTAH—Salt Lake Small Animal Hospital Association, the first Monday of every month, at the Holiday Inn, 3040 South State St., Salt Lake City, at 12:15 p.m. Douglas H. McKelvie, 1220 S. State St., Salt Lake City, Utah, secretary-treasurer.

VIRGINIA—Central Virginia Veterinary Association, the second Thursday of each month at 8:00 p.m., except July and August, at a place in Richmond to be announced monthly. Edwin M. Crawford, secretary-treasurer.

Northern Virginia Veterinary Conference Association, the second Tuesday of each month. T. P. Koudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. D. F. Watson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle. Roy C. Toole, 10415 Main St., Bellevue, secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. B. D. Benedictson, 3712 Plummer St., Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the third Thursday of each month in the Hotel Pritchard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.) C. R. Carlson, 1109 E. LaSalle Ave., Barron, Wis., secretary.

Coulee Region Veterinary Medical Association, the third Wednesday of every other month. F. N. Petersen, Box 127, Cashton, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. All but the special meetings will be held at the Top Hat Restaurant, Middleton. Robert E. Hall, 5718 Dogwood Place, Madison 5, Wis., secretary-treasurer.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. Raymond Pahle, 10827 W. Oklahoma Ave., Milwaukee, Wis.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. L. C. Allenstein, 209 S. Taft St., Whitewater, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. John B. Fleming, 209 E. 4th St., Marshfield, Wis., secretary.


NATIONAL BAND & TAG CO.

EST. 1902

*World's Largest and Oldest Manufacturing Specialists*

producing exclusively

**POULTRY BANDS**

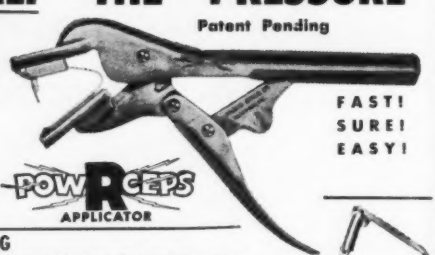
**LIVESTOCK TAGS**

and allied products

**NOW! CATTLE EAR TAGGING WITH HALF THE PRESSURE**

- Maximum leverage with minimum pressure!
- No lost tags from "weak" Application!
- Tags "snap-in" sealing position — won't fall out!
- No tagging fatigue — no swollen, sore hands!

Patent Pending



FAST! SURE! EASY!

POW-R-CEPS APPLICATOR

**HASCO STYLE 56 EAR TAG**

Specially designed for application with Pow-R-Ceps! Tamper-proof! Self-Piercing! Self-Sealing! Rounded post minimizes ear puncture — avoids infection. Colors and DHIA Unified Numbering System available. Used by DHIA Assoc., Artificial Breeders, Etc. in connection with unified numbering system.



**NEW! TAG-EZE CATTLE MARKERS**

JUMBO NUMBERS BOTH SIDES 1⅜" HIGH

**9.00** PER DOZ.

F.O.B. NEWPORT, KY.

Style 6-112

- Welded Chain #1/0
- Tempered Aluminum Tag ⅛" thick — "Wearability guaranteed".
- Extra heavy "5" Hook Fastener — ¼" thick steel.
- Unit assembled in 30 seconds with special plier costing $1.00 each.

Address Correspondence to P.O. Box 6-254.



*Write for Free Catalog!*

NATIONAL BAND & TAG CO., NEWPORT, KENTUCKY

## AMERICAN CYANAMID AWARDS TWO GRANTS FOR POULTRY DISEASE RESEARCH

The American Cyanamid Company has awarded grants to Utah State University and the University of California for research programs to combat poultry-killing infections.

Utah State University, together with the Utah Turkey Federation, is studying staphylococcus infections, which account for the death of more than 100,000 turkeys annually in the Utah turkey area.

The research program is under the direction of Dr. M. L. Miner, head of the department of veterinary science. Assisting in the program is Dr. W. W. Smith, head of the department of bacteriology and a 14-year veteran in staphylococcus research problems

Under the grant, injectable compounds and potentiated Aureomycin chlortetracycline will be evaluated against experimental *Staphylococcus aureus* infections of turkeys. The studies will also include the evaluation of Cyanamid's staphylococcus toxoid against these infections.

Previous studies have shown that antibiotics and the sulfa drugs are effective in combating certain of the staphylococci organisms, says Dr. Smith. It is hoped that these new studies will uncover additional means for controlling a wider range of disease of staphylococcic origin in turkeys.

The School of Veterinary Medicine of the University of California is testing appropriate chemotherapeutic agents for the control of pleuropneumonia-like organisms causing infections in poultry. These studies are under the direction of Dr. Henry Adler.

The organisms, referred to as PPLO by the poultry industry, cause chronic respiratory disease in chickens and infectious sinusitis in turkeys. Both are major diseases of economic importance in poultry-producing areas, and it is Dr. Adler's aim to develop a PPLO vaccine to help poultrymen combat these diseases.

The pleuropneumonia-like organism is the smallest form of bacteria known and has some characteristics closely related to the larger viruses and rickettsia.

Disease outbreaks often occur in flocks that have been weakened by exposure to conditions of stress or secondary invaders. Dr. Adler is using Aureomycin chlortetracycline in his studies to help ward off these adverse conditions and to aid in new methods of treatment developed by using new chemotherapeutic agents. — *Amer-Cyanamid Co. (Nov., Dec., 1959).*

### AVMA Research Fellowships Available

**The Council on Research of the AVMA announces the availability of a number of fellowships for postgraduate training for the academic year, 1960-1961.**

**The recipient of a fellowship must be a veterinarian and a citizen of the United States or Canada. Veterinary students who expect to graduate at the end of the current school year and who wish to follow a career in research may apply for a fellowship.**

**The latest date for filing the completed application is Feb. 15, 1960. Approximately one month is required for processing completed applications after receipt by the secretary of the Council. Qualified persons should secure and submit applications as early as possible to insure their file being complete for presentation to the Committee on Fellowships.**

**The Committee on Fellowships of the Council on Research will meet in March to consider applications, and the awards will be announced soon afterward. The stipend will be determined in each case by the needs of the individual, the location of the school in which he proposes to work, and other factors. In general, the stipends range from $100 monthly and upward.**

Any qualified person interested in graduate training may obtain application blanks and other information by writing to Secretary, AVMA Council on Research, 600 S. Michigan Ave., Chicago 5, Ill.

## Cryptococcus in Cat and Pigeon Droppings

A strain of *Crytococcus neoforms* was isolated from a granulomatous pulmonary lesion found in a cat. Nineteen strains of *C. neoformans* were isolated from 24 specimens of pigeon droppings and 1 strain from skylark droppings collected in Tokyo. —*J. Jap. Soc. Vet. Sci., 19, (1957): 188.*



## Classified Advertisements

**PERSONAL WANT ADS**—$4.00 for the first 25 words and 10 cents for each additional word; 35 cents for use of box number.

**TOTAL WORD COUNT** must include complete box number address (7 words) or personal address line.

**COMMERCIAL WANT ADS**—$5.00 for the first 25 words, 25 cents for each additional word; $1.00 for use of box number. (See paragraph above for total word count.)

**Remittance must accompany ad.**

**DEADLINES**

**1st of month issue — 6th of month preceding date of issue.**

**15th of month issue — 20th of month preceding date of issue.**

***Names of classified advertisers using key letters can not be supplied. Address your reply to the box number, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be sent to the advertiser.***

## Wanted—Veterinarians

Wanted—career state civil service field veterinarians, salary range, $6,768 to $8,748 dependent upon experience; vacation, sick leave, retirement benefits. Ages 21-50, graduate credited college; U.S. citizenship required. Contact Personnel Officer, Wisconsin Department of Agriculture, State Capitol, Madison, Wis.

Wanted—veterinarian with Pennsylvania license. Assistant in small animal hospital. Suburban Philadelphia. State experience and salary expected. Address Box B 36, JOURNAL of the AVMA.

Wanted—licensed veterinarian to carry out a full-time meat inspection program in health department of a progressive community in Northeastern Wisconsin. Permanent position with fringe benefits. Starting salary $6,000 per annum plus car allowance. Apply Board of Health, City Hall, Manitowoc, Wisconsin.

**CALIFORNIA STATE VETERINARY POSITIONS**

**Excellent opportunities in California State Government in either disease control and Pathology or Meat hygiene for Graduate Veterinarians with or without experience in practice. Salary range $556-$676. Senior veterinary students eligible to apply before graduation. Liberal employee benefits. Write at once for further information. CALIFORNIA STATE PERSONNEL BOARD, 801 Capitol Ave., Sacramento 14, California.**

Wanted—Director of Veterinary Research with a background of biochemistry or nutrition preferred. Write Morris Research Laboratories, 4000 Meriden Road, Topeka, Kansas.

Wanted—veterinarian with California license. Mixed practice in central California. Steady employment. Salary open. Address Box S 33, JOURNAL of the AVMA.

Wanted—1959 or '60 graduate for small animal practice. Position available now or upon graduation. $6,800 first year. Write Dr. A. M. Collins, Cicero Animal Clinic, 5732 W. Cermak Rd., Cicero, Ill.

Wanted—veterinarian for large animal practice in Northern Illinois. Mixed practice. Address Box B 31, JOURNAL of the AVMA.

Wanted—assistant veterinarian for small animal hospital on Long Island, N. Y. Starting July 1, 1960, until Oct. 31, 1960. Excellent salary. Address Box B 33, JOURNAL of the AVMA.

## Wanted—Positions

Graduate (Colo. '56) desires position in small, mixed, or large animal practice in Rocky Mountain region. Colorado, Kansas, and Montana license. Military obligation completed, April, 1960. Married. Address Box B 37, JOURNAL of the AVMA.

Veterinarian, two years practice experience, married, age 30, desires opportunity leading to lease or partnership in a small animal hospital. California, Idaho, Utah, Arizona licenses. Dr. M. S. Jackson, 1301 Fifth Ave., E. Twin Falls, Idaho.

Relief veterinarian available, New York and New Jersey licenses, small animals only. Address D. V. M., 1007 80th St. North Bergen, N. J.

Veterinarian, age 29, with experience in mixed practice and Air Force public health procedures, desires position in institutional or commercial field. Address Box B 2, JOURNAL of the AVMA.

California, Oregon, Missouri and Kansas licensee desires position in small, mixed or large animal practice. Twenty-seven years old, married, 1957 KSC graduate. Completing military obligation in April, 1960. Address Box B 34, JOURNAL of the AVMA.

Veterinarian with Master of Science degree in Animal Pathology, licensed in California and Wyoming, desires position in basic or applied research in animal diseases in the institutional, regulatory, or commercial field. Address Box B 25, JOURNAL of the AVMA.

Graduate (OSU '38) experienced in large animals, desires position leading to partnership or ownership in mixed practice. Prefer Ohio, Arizona, or New Mexico. Address Box B 42, JOURNAL of the AVMA.

Experienced veterinarian desires job in small animal hospital with permanent future in Pennsylvania Address Box B 32, JOURNAL of the AVMA.

Position wanted in mixed or large animal practice in Western or Midwestern U.S. Colorado, Montana, Nebraska, and South Dakota licensed, married, complete military obligation May, 1960. Address Box B 28, JOURNAL of the AVMA.

Veterinarian (University of Latvia, 1943) desires position in research field particularly about furred animals. Nine years experience in that field at Veterinary College of Norway. Address Box B 27, JOURNAL of the AVMA.

Position desired with small animal practitioner in Central or Northern Florida, leading to permanent association. Have Florida license. Military obligation completed summer, 1960. Address Box B 26, JOURNAL of the AVMA.




**TOO BUSY**

to give up a few hours a year for a health checkup?

Your best cancer insurance is a thorough checkup every year, and alertness to Cancer's 7 Danger Signals.

Learn how to guard yourself against cancer. Write to "Cancer" in care of your local post office, or call your nearest office of...

**American Cancer Society**


## Wanted—Practices

Wanted, by experienced practitioner, small animal practice to lease with option to buy in New York. Address Box B 39, JOURNAL of the AVMA.

Veterinarian with cash and eighteen years experience looking for any type practice or position utilizing his professional training. Consider anything West of Missouri river in mild, dry climate. Address Box B 35, JOURNAL of the AVMA.

Wanted—to buy small animal practice and hospital in New York or New Jersey. Capital available. Experienced. Address Box B 29, JOURNAL of the AVMA.

## For Sale or Lease—Practices

For sale—mixed practice in Eastern Ohio. Completely equipped hospital, escape-proof outside runs, modern apartment. Address Bertha M. Joseph, M.D., Martins Ferry, Ohio.

For lease, starting April 1, 1960—an established small animal hospital in central New Jersey. Excellent opportunity for industrious veterinarian. Living quarters are included. Address Box B 41, JOURNAL of the AVMA.

For sale—Indiana, established general practice in Michiana area. Fully equipped ranch-style clinic with family living quarters. $25,000. Credit and personal references in first letter. Address Box S 46, JOURNAL of the AVMA.

For sale—established Minnesota mixed practice for value of real estate, drugs, equipment. $5,000 to handle. Other interests. Address Box B 40, JOURNAL of the AVMA.

For sale—small animal practice in Southern California. No real estate. Good lease, easily nets more than $10,000. $8,500 with $2,500 down payment. Address Box B 12, JOURNAL of the AVMA.


**EAR-CROPPING FORMS**

Provides an accurate pattern against which to cut with knife or razor blade. Cannot move or slip when clamped into position. Made of non-rusting cast aluminum, highly polished. Simplicity of design and construction reduces possibility of breakage or mechanical failure. Forms immediately available for these breeds: Boxer, Boston Terrier, Great Dane, Doberman. $15, postpaid. Set of these four —$50, postpaid. Forms for other breeds made on special order. Sold to veterinarians only. Send check or money order.

**MacALLAN LABORATORIES**

**2126 Forest Road** **Lansing 10, Mich.**

For sale—Illinois general practice, established 20 years. Price $25,000; includes house, garage, office, equipment, drugs, and office furniture. $5,000 to handle. Address Box S 34, JOURNAL of the AVMA.

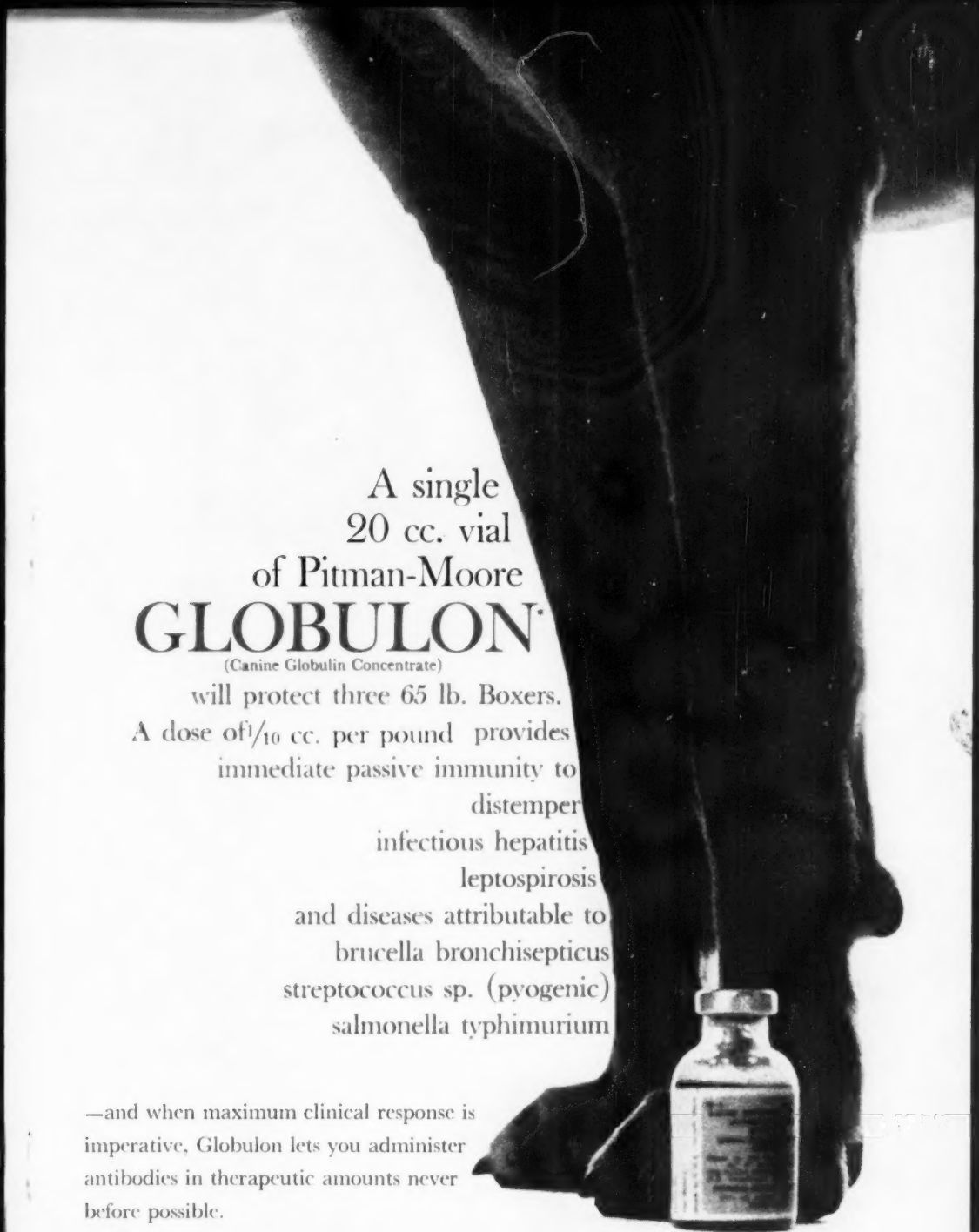
For sale—well-established small animal practice in new hospital, 50 miles from New York City. Real estate, eight acres, business, and equipment: $100,000. Terms, minimum cash $25,000. Unlimited possibilities. Address Box S 5, JOURNAL of the AVMA.

### Miscellaneous

For sale—Used Motorola two-way mobile radio, includes transmitter, receiver, speaker, antenna etc. Good working condition. $175. Address Box B 38, JOURNAL of the AVMA.

## Index to Advertisers


**Abbott Laboratories**
*Byogic* ..... 21
**Affiliated Laboratories**
*Erysipelas Serum and Vaccine* ..... 15
**American Cyanamid Co.**
*CYVAC Vaccine* ..... 31
**Armour Laboratories**
*Nomemic* ..... 48
*FSH-p, P.L.H., P.O.P.* ..... 49
**Arnold Laboratories**
*Liniment and Ointment* ..... 7
**Bio Ramo Drug Co.** ..... 51
**Chicago Pharmacal Co.**
*Urised* ..... 26
**Corn Belt Laboratories, Inc.**
*Pharmaceuticals* ..... 65
**Corn States Laboratories**
*Duragen* ..... 2nd cover
**Diamond Laboratories**
*Feraject 80* ..... 24
**Eaton Laboratories**
*Furacin* ..... 8, 9
*Entefur* ..... 38
*Furacin Products* ..... 41
**Fort Dodge Laboratories**
*Nolvasan* ..... 5
*Nolvasan "S"* ..... 36
**Gaines Dog Food**
*Gaines Meal* ..... 16, 17, 18
**Gamma Publications, Inc.**
*Book* ..... 56
**G. L. F.**
*Big Red* ..... 62
**Greyhound Corporation**
*Package Express* ..... 34
**Hyland Laboratories**
*Pre-Med* ..... 59
**Ken-L-Biskit**
*Dog Food* ..... 25
**MacAllan Laboratories**
*Ear-Cropping Forms* ..... 67
**McCabe-Powers Body Co.**
*Veterinarians' Service Body* ..... 27
**Massengill, S. E. Co.**
*Daribiotic* ..... 53
**Massillon Rubber Co.**
*Expenda-Gloves* ..... 58
**Merck & Co., Inc.**
*Sulfabrom* ..... 42, 43
**Mutual of New York**
*Insurance* ..... 4th cover
**National Band and Tag**
*Tag-Eze Cattle Markers* ..... 64
**National Laboratories, Inc.**
*Coprox 12 Powder* ..... 30
**Norden Laboratories**
*Dexiron* ..... 1
**Parke-Davis & Co.**
*Veterinary Catalog* ..... 37
**Parlam Corporation**
*Mikedimide* ..... 10
**Pfizer Laboratories**
*Cosa-Terramycin, Terramix* ..... 22, 23
*Liquamycin* ..... 35
**Philadelphia Ampoule Laboratories**
*Irondex-100* ..... 19
**Pitman-Moore Company**
*Virogen D-H-L* ..... 3
*Amino-Plus* ..... 12, 13
*Globulon* ..... 3rd cover
**Professional Printing**
*Histacount* ..... 54, 60
**Research Laboratories, Inc.**
*AVMA Booklet* ..... 6
**Sani-Cage Distributing Co.**
*Animal Cages* ..... 46
**Schering Corporation**
*Diathal* ..... 61
**Swift & Co.**
*Pard* ..... 28
**Upjohn Corporation**
*Biosol* ..... 29
**Vitamineral Products Co.**
*Ribal II, CON-O-Mineral* ..... 32
**Warren-Teed Products Co.**
*Tympacaine* ..... 45
**Wilson & Co.**
*4-Paw Tasty Mix* ..... 11
**W-W Manufacturing Co.**
*Cattle Chute* ..... 55
**Wyeth Laboratories**
*Sparine* ..... 57



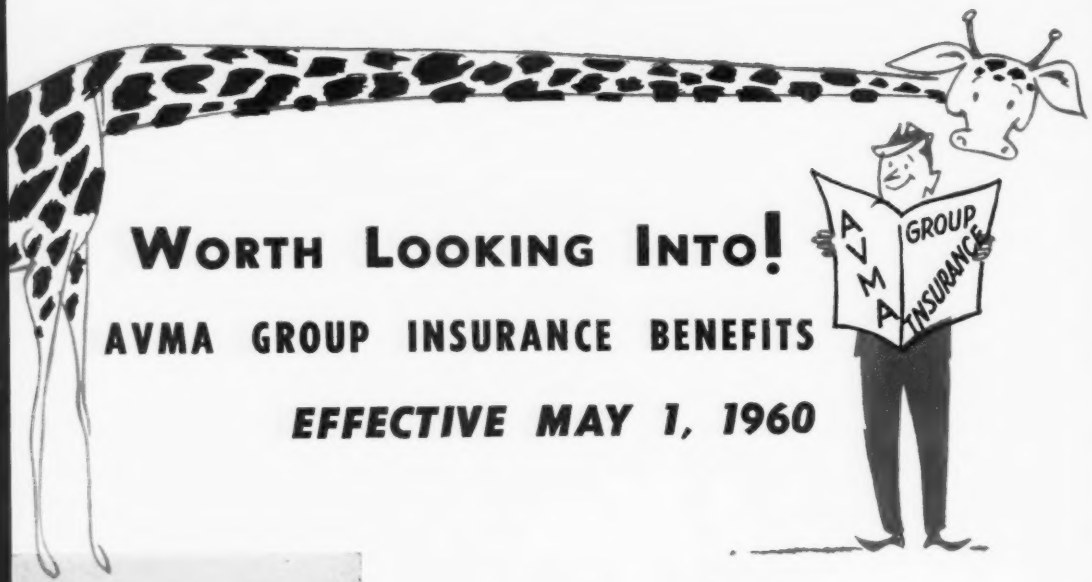
A single
20 cc. vial
of Pitman-Moore
# GLOBULON*
(Canine Globulin Concentrate)

will protect three 65 lb. Boxers.
A dose of 1/10 cc. per pound provides
immediate passive immunity to
distemper
infectious hepatitis
leptospirosis
and diseases attributable to
brucella bronchisepticus
streptococcus sp. (pyogenic)
salmonella typhimurium

—and when maximum clinical response is imperative, Globulon lets you administer antibodies in therapeutic amounts never before possible.

*Trademark for P-M Co. Bio. No. 677
Globulon is supplied in 20 cc. vials.

PITMAN-MOORE COMPANY
DIVISION OF ALLIED LABORATORIES, INC.
INDIANAPOLIS 6, INDIANA




# WORTH LOOKING INTO!

## AVMA GROUP INSURANCE BENEFITS

## *EFFECTIVE MAY 1, 1960*

**IMPORTANT NOTE:**

If you are one of the over 4,000 members of AVMA currently participating in the insurance program, the new group life insurance and increased surgical benefits will automatically become effective on May 1, 1960 with a nominal increase in cost. (The anticipated dividend should offset most of the increase.)

You will soon receive complete details including an application form for the increased income insurance.

✓ **INCOME INSURANCE**

Now up to $600 a month
New accident partial disability benefit

✓ **GROUP LIFE INSURANCE**

Now from $20,000 at age 25 to $1,525 at age 65

✓ **ACCIDENT INSURANCE**

Up to $5,000

✓ **CATASTROPHE HOSPITAL and SURGICAL INSURANCE**

New outpatient benefits
Substantially increased surgical benefits

More liberal dependent definition

## SEND FOR DETAILS

Available to active AVMA members under age 61 except in the following states:

California
Iowa
Minnesota
New Jersey
New York
Ohio
Oklahoma
Oregon
Pennsylvania
Virginia
Washington
Wisconsin

AVMA Group Insurance Trust
140 S. Dearborn St.
Chicago 3, Illinois

Please send me the details concerning the new improved group insurance program sponsored by AVMA.

Name .....

Street .....

City ..... State .....